

Budget Superguide: Top Digital Cameras p.87

N O V E M B E R 1 9 9 7

Macworld

Now incorporating
MacUser
Macworld and MacUser join forces, pages 25 and 38

THE ESSENTIAL MACINTOSH® RESOURCE
www.macworld.com

Why Apple Pulled the Plug

Inside Story

**The Clone Era
Ends, page 31**



\$4.99 CANADA \$5.99

11 >



OH # \$! #


Netscape: Apple to Acquire Power Computing for \$100M

BackForwardHomeReloadImagesOpenPrintFindStop

Location: http://product.info.apple.com/pr/press.releases/1997/q4/970902.pr.rel.powercc.html

What's New?What's Cool?DestinationsNet SearchPeopleSoftware

find itmain



Press Release


Apple to Acquire Power Computing for \$100M

CUPERTINO, Calif.--Sept. 2, 1997--Apple Computer, Inc. announced today that it will acquire Power Computing Corporation's core assets in a deal valued at \$100 million in Apple common stock. Included in the key assets Apple will acquire are the right to retain key employees with expertise in direct marketing, distribution, and engineering; Power Computing's customer database; and the license to distribute the Mac OS operating system.

"Power Computing has pioneered direct marketing and sales in the Macintosh market, successfully building a \$400M business," said Steve Jobs, Apple Board member. "We look forward to learning from their experience, and welcoming their customers back into the Apple family."

"Power Computing is grateful for the tremendous support and encouragement we have received from the entire Macintosh community," said Stephen Kahng, Power Computing founder and CEO. "We believe that in our small way, we have helped to make the Macintosh stronger, and that the spirit of Power will live on."

Power Computing will retain the Power Computing name and has stated it will sell Mac OS compatible computers through Dec. 31, 1997. Apple will provide ongoing Mac OS support to Power Computing customers and Power Computing will continue to provide hardware and warranty service to its customers.

mainpage onewhat's newfind itcontact ushelp

[Main](#) | [Page One](#) | [What's New](#) | [Apple Computer, Inc.](#) | [Find It](#) | [Contact Us](#) | [Help](#)

[PR Library](#) | [Corporate Information](#) | [Speeches](#) | [Apple Soapbox](#) | [Executive Profiles](#) | [Contacts](#)

www.powercc.com



YOUR LICENSE PLEASE



Power Computing

W E L L S D I R T H E

Apple Just Spent \$100 Million on Our Systems — May

POWERTOWER™ PRO 250

250 MHz Upgradeable PowerPC™ 604e Processor

1MB Level-2 Cache

FREE Upgrade to 128MB RAM (1GB Max)

Your Choice: 2GB 7200 RPM SCSI HD
or 4GB 5400 RPM Hard Drive

24x CD-ROM Drive

8MB IMS Twin Turbo 128-bit Graphics Accelerator

6 PCI Slots

9 Drive Bays

\$2500 in Bundled Software Including Mac™ OS 8
and Macromedia™ Director™ 5.0

Extended Keyboard and Mouse

Tower Enclosure

\$3299

NEW LOW PRICE!

(Display not included)

POWERTOWER PRO SYSTEMS

Starting at **\$2199**

**Upgrade
RAM to
128MB
FREE!**



NOW SHIPPING!

THE NEW POWERCENTER™ PRO 240

\$2299

(Display not included)

240 MHz PowerPC™ 604e Processor

Exclusive 60 MHz Bus

1MB Level-2 Cache

FREE Upgrade to 64MB RAM (512MB Max)

2GB 5400 RPM Ultra Narrow SCSI Hard Drive

16x CD-ROM Drive

2MB Video DRAM (4MB Max)

3D Video Hardware Accelerator Built In

Ultra SCSI up to 20MB/sec

\$1000 in Bundled Software

Extended Keyboard and Mouse

Low-Profile Enclosure

**Upgrade
RAM to
64MB
FREE!**



POWERCENTER PRO 210

\$1999

(Display not included)

210 MHz PowerPC™ 604e Processor

Exclusive 60 MHz Bus

FREE Upgrade to 64MB RAM (512MB Max)

2GB 5400 RPM Ultra Narrow SCSI Hard Drive

**Upgrade
RAM to
64MB
FREE!**

POWERCENTER™ PRO 180 CORE

\$1695

(Display not included)

180 MHz PowerPC™ 604e Processor

Exclusive 60 MHz Bus

16MB RAM (512MB Max)

2GB 5400 RPM Ultra Narrow SCSI Hard Drive

POWERBASE™ 240

\$1299

NEW LOW PRICE!

(Display not included)

240 MHz PowerPC 603e Processor

16MB RAM (1GB Max)

2.1GB EIDE Hard Drive

16x CD-ROM Drive

256K Level-2 Cache

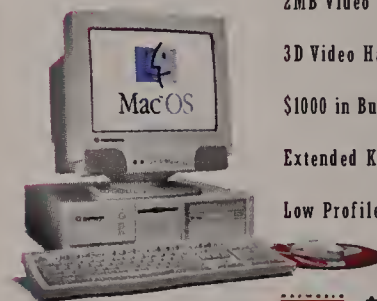
2MB Video DRAM (4MB Max)

3D Video Hardware Accelerator Built In

\$1000 in Bundled Software

Extended Keyboard and Mouse

Low Profile Enclosure



ORDER DIRECT 800-487-0621 OR

Major Accounts, Education and Government Customers Call 800-952-92

2400 South IH 35 Round Rock, TX 78681 Telephone 512-388-6868

©1997 Power Computing Corporation. All rights reserved July 1997. Apple, Macintosh and Mac OS under license from Apple Computer, Inc. The Mac OS logo is registered in the United States. PowerTower, PowerCenter, PowerBase and Powertron are trademarks of Power Computing Corporation. All other brand and/or product names are the property of their respective owners and specifications are valid in the U.S. only and are subject to change without notice.

ARE YOU READY FOR SPEEDING?

You Should Consider Picking One Up While They Last?

POWERTOWER PRO 250 CORE

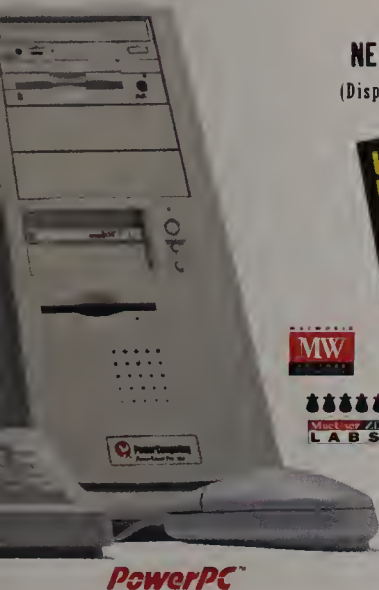
\$2699

NEW LOW PRICE!
(Display not included)

**Upgrade
RAM to
96MB
FREE!**



250 MHz PowerPC 604e Processor
FREE Upgrade to 96MB RAM (1GB Max)
1MB Level-2 Cache
2GB 5400 RPM SCSI Hard Drive
24x CD-ROM Drive
Twin Turbo 64-bit Graphics Accelerator with 2MB VRAM 6 PCI Slots
9 Drive Bays
\$2500 in Bundled Software Including Mac™ OS 8 and Macromedia Director 5.0
Extended Keyboard and Mouse
Tower Enclosure



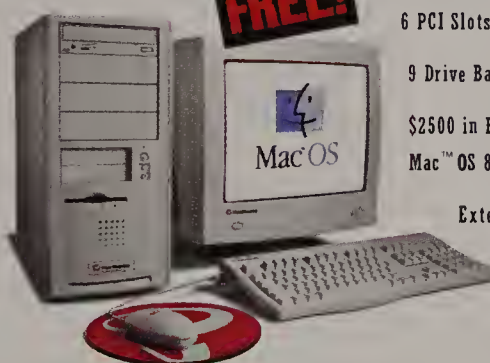
POWERTOWER PRO 225 CORE

\$2199

NEW LOW PRICE!
(Display not included)

**Upgrade
RAM to
96MB
FREE!**

225 MHz PowerPC 604e Processor
FREE Upgrade to 96MB RAM (1GB Max)
1MB Level-2 Cache
2GB 5400 RPM SCSI Hard Drive
24x CD-ROM Drive
Twin Turbo 64-bit Graphics Accelerator with 2MB VRAM
6 PCI Slots
9 Drive Bays
\$2500 in Bundled Software Including Mac™ OS 8 and Macromedia Director 5.0
Extended Keyboard and Mouse
Tower Enclosure



POWERTRON™ 24" DISPLAY

\$3499



New...the world's largest desktop display. Exclusive Super Fine Pitch Trinitron® CRT Mac™ resolution up to 1920 x 1200 (vis 22.5")

POWERTRON™ 20" DISPLAY

\$1399

Mac™ resolution up to 1152 x 870 @ 75 MHz
Super Fine Pitch Trinitron® CRT (vis 19.1")

RATED #1 BY MACWORLD,

MAC USER AND MACWEEK.

NEW, UNBELIEVABLE PRICES,

TONS OF FREE RAM

APPLE FRONT LINE SUPPORT ON ALL SYSTEMS

UNRIVALED PRICE AND PERFORMANCE.

HURRY - SUPPLIES ARE LIMITED

AND THEY WILL SELL OUT.

ORDER ONLINE AT WWW.POWERCC.COM

12-388-6799 International Fax 512-310-6646

registered trademarks. The Mac OS and Mac OS logo are trademarks of Apple Computer, Inc. and are used in other countries. The Power Computing logo is a registered trademark of Power Computing Corporation. MacBench is a registered trademark of Ziff-Davis, Inc. PowerPC is a trademark of International Business Machines Corporation. Power Computing is not responsible for errors in photography or typography. Prices are subject to change without notice.



PowerComputing

Circle 151 on reader service card

Macworld



Features

- 87** Digital Imaging Superguide
Snap or scan a picture, fix it up, and print it out. Top picks at rock-bottom prices.
- 89** **Snap It**
LAB TEST
BY JOHN GODDARD Macworld Lab rates 11 digital cameras—all under \$600—to zero in on which take the best pictures with the least amount of fuss.
- 99** **Scan It**
LAB TEST
BY PETER M STOLLER From paper to pixels: nine scanners under \$500 lab-tested for true-to-life color and speed.
- 107** **Tweak It**
BY JIM HEID Five easy-to-use image editors make it a snap to retouch, resize, and otherwise fix less-than-perfect pictures.
- 115** **Print It**
LAB TEST
BY JOSEPH SCHORR Now that you've got your perfect color image, how do you get perfect color prints? Macworld Lab tests nine color printers under \$500 to pick the clear, crisp winner.

MacUser

- 145** GraphicsUser
Safeguard Your Art
BY BEN LONG Protect your digital creations against binary banditry.
- 150** GraphicsUser
3-D Tricks for the 2-D Trade
BY JANET ASHFORD The right surface textures make simple shapes look impressive.
- 153** NetUser
Open for Web Business
BY SHELLY BRISBIN Small-business Web strategies.
- 157** NetUser
Master of Your Domain
BY JASON SNELL Domain-name tricks for your submission.
- 159** SmartUser
Help Folder
BY BOB LEVITUS AND CHRISTOPHER BREEN Bob and Chris answer all your questions.
- 163** MaxUser
Mouse of Blues
BY MARTIN WONG Six-string accessories for your inner Ziggy Stardust.
- 166** Andy Ihnatko
An Alan Smithee Computer
BY ANDY IHNATKO Macintosh product placement is a Hollywood horror show.



3-D boards at 2-D prices
in News, page 34.

News

- 30** Special Report
Apple Buys Power Computing
Acquisition seems to be the first step in eliminating the clone competitors.
- 34** **Stopping Junk E-Mail**
Technical fixes give way to legislative action.
- 38** **Publishing Shake-Up**
Competitors *Macworld* and *MacUser* merge.
- 42** Sneak Peek
Quicken 98
Quicken Deluxe 98 and Quicken Basic 98 offer substantial improvements.



Apple's latest PowerBook, the 2400c/180, in Reviews, page 50.



Video-editing secrets and how-to's in Media, page 137.

Opinion

- 17 **Letters**
- 25 **The Vision Thing**
BY ANDREW GORE The shape of things to come.
- 250 **The Desktop Critic**
BY DAVID POGUE Be discerning, oh reading public.
- 12 **How to Contact Macworld**

Secrets

- 123 **Mac OS 8: List View**
BY JOSEPH SCHORR Living with the Mac's new List View.
- 129 **Quick Tips**
BY LON POOLE Tips, tricks, and shortcuts.



A camcorder and digital camera all in one—see News, page 44.

Buyers' Tools

LAB TEST

- 79 **Mac Superguide**
Detailed specs for every Mac system on the market, lab tested and Star Rated.

Media

- 137 **Adobe Premiere Secrets**
BY JIM HEID Tips and insights into the Mac's premier video editor.
- 142 **Publishing Workshop**
BY DAVID BLATNER Worry-free image editing with Photoshop 4's adjustment layers.

ON THE COVER

Photograph by
Paul Franz-Moore

Reviews

- 50 ★★★/5.8 **PowerBook 2400c/180**
Portable system
- 52 ★★★★★/8.0 **Nodester**;
★★★★/7.8 **PhotoVista**;
★★★★/7.8 **QuickTime VR Authoring Tools Suite 2.0**;
★★★/6.9 **Spin Panorama**
QuickTime VR tools compared
- 54 ★★★★★/6.8 **AppleShare IP 5.0**
Server suite for intranets and the Internet
- 58 ★★★★★/8.0 **Cyber Patrol 2.0**;
★★★★/8.5 **SurfWatch 3.0**;
★★★/6.0 **X-Stop 1.0**
Internet filters compared
- 60 ★★/3.8 **PrimeraPro Elite**
Dye-sub/thermal-wax color printer
- 62 ★★★★★/6.6 **FotoFun Digital Color Photo Printer**;
★★/4.0 **NC-2 Digital/Video Printer**;
★★/4.0 **Panasonic TruPhoto Printer**
Photo printers compared
- 64 ★★★★★/7.1 **CADtools 1.0**;
★★★★/7.7 **VectorTools 2.0**;
★★★/6.6 **Vertigo 3D Words 1.0**
Illustrator plug-ins
- 66 ★★★★★/8.6 **DitherBox 1.0**;
★★★★/6.6 **HVS ColorGIF 2.0**
Web color tools
- 69 ★★★★★/7.6 **BeyondPress 3.0**
QuarkXPress-to-HTML converter
- 70 ★★★★★/7.8 **VivoActive Producer 2.0**
Streaming video creation
- 71 ★★★★★/6.9 **WebCollage 1.01**
Dynamic image publisher
- 72 ★★★★★/7.2 **Omnis Studio**
Database development tool
- 74 ★★★★★/8.4 **Preflight Pro**
Debugging tool for Quark pages
- 74 ★★/5.9 **Canvas 5.0.2**
Graphics package
- 76 ★★★★★/8.8 **Gridz**
Action/strategy game

StarMax

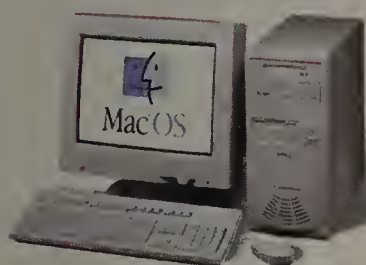
When You Have A Really Tight Deadline The Fastest Thing In The Room Shouldn't Be Your Heart Beating.

If you're looking for a Mac™ OS system that gives you high performance and handles the pressure of today's business environment, turn to Motorola. Our new StarMax™ 5000 series powers you past the most demanding deadlines.



No other business machine makes more sense when you consider Motorola developed the PowerPC™ architecture, which Apple and every other Mac OS manufacturer uses. In addition, only Motorola offers a five-year limited warranty with free one-year on-site service.

Introducing The New StarMax 5000 Series. Featuring A Faster 50 MHz Bus For Greater Performance.



StarMax 5000/225

\$1,999

- 225 MHz PowerPC 603e
- 32MB RAM
- 2.5GB Hard Drive
- 16x CD-ROM
- 512K L2 Cache
- ATI Rage™ II+3/D
- 10 Base-T Ethernet
- Over \$1,000 Bundled Software†
- Mac OS 8*
- 1-Year Free On-Site Service

NEW!



StarMax 5000/250

\$2,299

- 250 MHz PowerPC 603e
- 32MB RAM
- 2.5GB Hard Drive
- 16x CD-ROM
- 512K L2 Cache
- ATI Rage™ II+3/D
- 56 Kbps Data/Fax Modem
- 100MB Zip Drive
- Over \$1,000 Bundled Software†
- Mac OS 8*
- 1-Year Free On-Site Service

NEW!



StarMax 5500/200

\$2,999

- 200 MHz PowerPC 604e
- 64MB RAM
- 4.3GB Hard Drive
- 16x CD-ROM
- 512K L2 Cache
- ATI Rage™ II+3/D
- 10/100 Base-T Ethernet
- 100MB Zip Drive
- Free Bundled Utility Software
- Mac OS 8*
- 1-Year Free On-Site Service

NEW!



StarMax 5000/300

\$3,399

- 300 MHz PowerPC 603e
- 32MB RAM
- 4.3GB Hard Drive
- 16x CD-ROM
- 512K L2 Cache
- ATI Rage™ II+3/D
- 10/100 Base-T Ethernet
- 100MB Zip Drive
- 8MB TwinTurbo Graphics Card
- Mac OS 8*
- 1-Year Free On-Site Service

NEW!

To find out how to do your work faster
call 1-800-759-1107 ext. MWD2
or surf to www.mot.com/starmax/mwd2



MOTOROLA

Computer Group

†Approximate retail value. *Via free upgrade not including shipping and handling. ©1997 Motorola, Inc. All rights reserved. StarMax is a trademark and Motorola and M are registered trademarks of Motorola, Inc. PowerPC is a registered trademark of International Business Machines Corporation, used under license therefrom. Mac OS is a registered trademark of Apple Computer, Inc. All other trademarks or registered trademarks are the property of their respective holders.

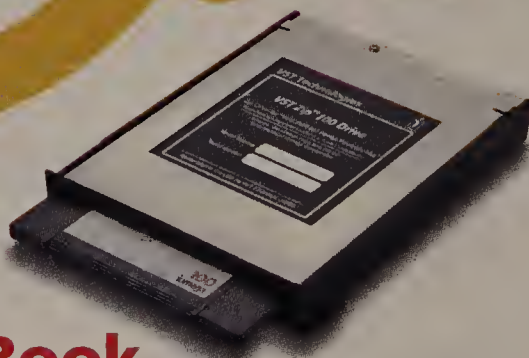
What you never thought possible.™

Circle 207 on reader service card

PowerBook[®] Solutions

The Capacity To Do More™

The New 100MB Standard in
1 Zip disk holds
70
floppies
Portable Storage



VST Puts a Little Zip™ in your PowerBook

VST proudly introduces the Zip100 drive, a Zip drive designed for use in the PowerBook 3400, 190/5300 and 1400 Expansion Bay. VST Zip100 drives use the same disks as Iomega's desktop version, each storing up to 100MB of data. Zip disks are ideal for backing up important files, for archiving data, and for cleaning up crowded hard drives. Transferring large files and databases from your PowerBook to your desktop machine is now quick and easy using Zip disks.

Visit Us At: www.vsttech.com

Available At:

MacWAREHOUSE
1-800-255-6227

ClubMac
1-800-258-2622

The Mac Zone
1-800-248-0800
MV02

MacMall
1-800-222-2808

MacConnection
800-998-0040

VST
TECHNOLOGIES
Incorporated

Questions? Call Us At: (508) 263-9700
Shipping September 1997

Iomega, the Iomega logo, Zip, and The Capacity To Do More are trademarks of Iomega Corporation. All other trademarks are property of their respective holders. Iomega patents protected by patent applications pending in the US and other countries.



Circle 73 on reader service card

Macworld

PRESIDENT AND CEO
ASSISTANT TO THE CEO
CHIEF OPERATING OFFICER
FINANCIAL ANALYST
VICE PRESIDENT OF HUMAN RESOURCES
EMPLOYEE RELATIONS MANAGER

Colin Crawford
Sharon Sanderson
Stephen Daniels
Eos de Feminis
Shelly Ginenthal
Marisa Chow

Macworld is a publication of Mac Publishing L.L.C.

CURRENT ISSUE STAFF

MACWORLD EDITORIAL Adrian Mello, Galen Gruman, Carol Person, Jane Lagas, Howard Baldwin, Stephen Beale, Anita Epler, Cathy E. Abes, Elizabeth Dougherty, Tova Fliegel, Linda Comer, Suzanne Courteau, Cameron Crotty, Katherine L. Ulrich, Allyson Bates, Keith A. Mitchell, Deborah Weinberger, Andrea Dudrow, Patricia Carberry-Harris **LAB** Lauren L. Black, Susan Silvius, Mark Hurlow, Jeff Sacilotto, Paul Brown **COPY EDIT AND EDITORIAL PRODUCTION** Ruth Henrich, Paul-Michael King, Lisa Peach Brazial, Gail E. Nelson, Elissa Rabellino, Jackie Goodman **ART AND DESIGN** Leslie Barton, Joanne Hoffman, Tim Johnson, Sylvia Chevrier, Martha Katt, Belinda Chlouber, Aimée Lennig **ONLINE** Paul Devine, Jeff Julian, Elizabeth Jensen, Ed Ramirez, Nicholas Harvey, Jamila Johnson, Arne Hurty, Chip Carman, Karen Lihatore, Caius van Nouhuys, Matt McAlister, Roxanne Gentile, Jessica Graves

MACUSER EDITORIAL Pamela Pfiffner, Andrew Gore, Claire H. Breen, Henry Bortman, Rik Myslewski, Karen J. Ohlson, Jim Shatz-Akin, Nancy Peterson, Roman Loyola, Kedren Dillard, LaMont Ridgell, Andres Brandt, Scholle Sawyer, Brooke C. Wheeler **COPY DESK** Eva Langfeldt, Rhoda Simmons, Jon Zobenica **DESIGN** Lisa Orsini, Diane Dempsey, Jan McKenzie Rogers, Michael Rattary **LABS** Jeffrey S. Pittelkau, Kristina De Nike, Jeffy K. Milstead, Rick Oldano, Martin Wong, Gil Loyola, Sterling Augustine, Eric Hale, Scott Lane **ONLINE** James S. Bradbury, Jason Snell, Barbara Bergesen, Philip W. Dyer

Mac Publishing L.L.C. is the world's premier publisher of Macintosh-related periodicals, including Macworld and MacWeek. Local-language editions of Macworld are published by Mac Publishing L.L.C. licensees in the following countries with the following editors:

AUSTRALIA: AUSTRALIAN MACWORLD
BULGARIA: PC WORLD BULGARIA*
COSTA RICA: MACWORLD
CENTRO AMERICA & CARIBE
CZECH AND SLOVAK REPUBLICS: PC WORLD*
DENMARK: MACWORLD DANMARK
FRANCE: MACWORLD FRANCE
GERMANY: MACWELT
ICELAND: TÖLVUHEIMUR-PCWORLD
ISLAND*
INDIA: PC WORLD INDIA*
IRELAND: IRELAND-APPLE REPORT
ISRAEL: MACWORLD ISRAEL
ITALY: MACWORLD ITALIA
JAPAN: MACWORLD JAPAN
KOREA: MACWORLD KOREA
NETHERLANDS: MACWORLD
NETHERLAND & BELGIË
NORWAY: PC WORLD MAC & MULTIMEDIA*
POLAND: MACWORLD POLAND
PORTUGAL: MACIN PCIN
SPAIN: MACWORLD ESPAO
SWEDEN: MACWORLD SWEDEN
SWITZERLAND: MACWORLD SCHWEIZ
TAIWAN: MACWORLD CHINESE
TURKEY: MACWORLD TÜRKIYE
UNITED KINGDOM: MACWORLD UK

Matthew J.C. Powell
Neli Vatcheva
Hermanos Trejos
Jaroslav Vydra
Martin Jorgenson
Jean-Philippe Dubrun
Andreas Borchert
Stefan Hrafn Hagalin
Ashish Bhatia
Frank Quinn
Ilan Shekel
Enrico Lotti
Kazu Kajihara
Seongsoo Kiin
Gert-Jan Oelderik
Tom Helge Berglie
Tomasz Bitner
Fátima Ferrão
Carlos Perez
Lennart Håkansson
Cuno Schneeberger
Fred Jame
Bahattin Apak
Simon Jary

* Includes a Macworld section or content.



burning
reasons
to own

NEW

Painter 5



Previous Awards from Painter 4.

© Copyright 1997 MetaCreations Corporation. All rights reserved. Painter and Natural-Media are trademarks of MetaCreations Corporation. All other trademarks are the property of their respective holders.

New Painter™ 5 is the ultimate way to create sizzling original artwork—combining comprehensive image-editing features with our patented Natural-Media™ technologies.



Expandable Plug-in Brushes

let you paint with fire and neon, retouch in a snap, and transform images into hand-rendered paintings you can scale, twist, skew, and mirror—the possibilities are endless. And an extensible architecture means that as more brushes become available, you can add them to your existing software.



Dynamic Plug-in Floaters

perform special effects like burning and tearing edges, Liquid Metal, Glass Distortion, Bevel World, Impasto and more—all available only in Painter. You get the flexibility of a Photoshop-style Adjustment Layer, with virtually unbounded imaging functions.



Powerful Internet publishing tools

help you create red-hot Web sites using seamless background patterns, instant 3D buttons, and multi-frame GIF animation.



Industry-standard masking

means you don't have to burn up time learning how to do it. And Painter 5 reads and writes files in Photoshop's native format, so moving between programs is easy.



Terrific tear-off tools. Spark your creativity by working the way you want to—just tear off brushes, art materials, and menu items and place them on custom palettes that fit your needs precisely.

With scorching features like these, why waste another minute. Get the world's most creative design tool now.

Painter 5. It's hot. It's cool.

For sales and product information, call

800-846-0111 Dept. NM11
<http://www.metacreations.com>



MetaCreations
The Visual Computing Software Company

Circle 5 on reader service card

NEW!
OrangePC 530
For ALL-IN-ONE
Macintosh 5400/5500

PC Applications Driving You Bananas?



Put Orange[®]PC in Your Apple

Sometimes, to keep from going bananas, you must run a PC application on your Mac. The OrangePC[®] is an expansion card which allows you to run both Mac and PC programs simultaneously. It magically transforms your Apple into a dual computer platform which can support Windows[®]NT, NeXT[®] OPENSTEP[®], Windows[®]95, Windows[®] 3.1 or DOS. It makes thousands of PC applications compatible with your Macintosh system.

If you have a PCI based Performa (7" expansion slot), a full-sized PCI Power Macintosh compatible (12" slot) or a NuBus based Quadra, there's an OrangePC solution that's right for you. Whether you are budget sensitive, or performance hungry, you may select

a processor from the low-cost Intel[®]486 up to our exclusive Intel MMX Pentium[®] 200MHz.

And, the OrangePC is affordable, with prices starting at \$499.



The technical stuff: OrangePC models come in 7" or 12" PCI, and NuBus card types; up to 5x86 133MHz or up to MMX Pentium 200MHz; RAM from 8 to 256MB on board; up to 256K pipeline burst L2 cache; parallel port (for those delightful PC dongles); 2 high speed serial ports; 16 bit Sound Blaster[®] compatible In/Out; game port; one or two MB of video DRAM.

Call us today, and put an OrangePC in your Apple.



"17 Years of Innovation and Excellence"
1400 N. Lakeview Ave., Anaheim, CA 92807
(714) 779-2772 www.orangemicro.com

Circle 33 on reader service card

Macworld

EDITOR IN CHIEF

Andrew Gore

EXECUTIVE ASSISTANT

Patricia Carberry-Harris

EDITORIAL

EDITOR

Galen Gruman

EXECUTIVE EDITOR

Carol Person

SENIOR EDITOR/NEWS

Stephen Beale

SENIOR EDITOR/FEATURES

Elizabeth Dougherty

SENIOR EDITOR/REVIEWS

Anita Epler

SENIOR EDITOR/DEPARTMENTS

Nancy Peterson

SENIOR TECHNOLOGY EDITOR

Henry Bortman

SENIOR ASSOCIATE EDITORS

Cathy E. Abes,

Linda Comer,

Jason Snell,

Katherine L. Ulrich

ASSOCIATE EDITORS

Allyson Bates,

Keith Mitchell,

Scholle Sawyer,

Brooke C. Wheeler

ASSISTANT EDITOR

Andrea Dudrow

CONTRIBUTING EDITORS

Sharon Zardetto Aker, Mel Beckman, David Biedny, Christopher Breen, Don Crabb, Shelley Cryan, Robert C. Eckhardt, Erfert Fenton, Bruce Fraser, Jim Heid, Andy Ihnatko, Ted Landau, Bob LeVitus, Steven Levy, Cary Lu, Deke McClelland, Tom Negrino, David Pogue, Lon Poole, John Rizzo, Steve Roth, Bob Schaffel, Joseph Schorr, Charles Seiter, Michael Swaine, Franklin N. Tessler, Gregory Wasson, Chuck Weger, Kelli Wiseth

LAB

LAB DIRECTOR

Jeffrey S. Pittelkau

ASSISTANT LAB DIRECTOR

Susan Silvius

SENIOR LAB ANALYSTS

Mark Hurlow,

Jeffy K. Milstead,

Jeff Sacilotto

ASSOCIATE LAB ANALYST

Gil Loyola

COPY EDIT

MANAGING EDITOR

Claire H. Breen

COPY CHIEF

Paul-Michael King

SENIOR TECHNICAL COPY EDITOR

Rhoda Simmons

SENIOR COPY EDITOR

Jon Zobenica

ART AND DESIGN

DESIGN DIRECTOR

Eleanor Leishman

ASSOCIATE ART DIRECTOR

Sylvia Chevrier

DESIGNER

Tim Johnson

ASSOCIATE DESIGNERS

Martha Katt,

Michael Rattary

DESIGN ASSOCIATE

Aimée Lennig

LAYOUT ARTIST

Jackie Goodman

OmniPage Pro 7.0 gives you the recognition you deserve.

OmniPage Limited Edition or **OmniPage Lite** is the OCR that came with your scanner. They give you basic OCR.

How to Improve Your OCR Accuracy and Save Big \$\$\$

Caere Corporation (NASDAQ: CAER) recently announced an upgrade program that makes the OmniPage Pro optical character recognition (OCR) software available to scanner users at an estimated street price of only \$129. This is an inexpensive way for scanner users to step up to fully-featured OCR products (including those bundled with flatbed and edge-feed products) can upgrade to the full version of OmniPage Pro at a \$300 price point.

OmniPage Pro has a separate upgrade package available through Computer City, Egghead, and Best Buy. Since the vast majority of scanner users are eligible to upgrade at this great price point, the large number of scanner manufacturers that bundle Caere OCR software (Microtek, Canon, Plustek, Umax, Nikon, Agfa, Logitech, Reliysys, etc.) are eligible for the upgrade.

The large number of scanner manufacturers that bundle Caere OCR software (Microtek, Canon, Plustek, Umax, Nikon, Agfa, Logitech, Reliysys, etc.) are eligible for the upgrade.

The upgrade program includes OmniPage Pro 6.0 (Windows 3.1) and 7.0 (Windows 95), which offer all the capabilities of the bundled software for extended functionality. Most notable among them are high-resolution "zoning" and preprocessing of scanned images, verifiers for the Page technology for the retention of the original page formatting, as well as OCR training and deferred processing capabilities.

The Changing OCR Market: In the not so distant past, OCR required specialized hardware and OCR software that was often difficult to use and provided limited functionality. These issues were frustrating and limited the use of OCR to high-end vertical markets. The use of desktop OCR was limited to the "early adopters."

"Today, several trends are contributing to the widespread use of OCR," said Chad Kinzelberg, Caere's vice president of marketing. "One of the major factors contributing to the use of OCR is the program is another major factor that will promote the use of OCR. The occasional OCR user will find Caere software more attractive because of the ease of use and the fact that it is so cost-effective."

Analysts following the OCR market agree that OCR use is on the rise and that the industry trends promoting its mainstream adoption:

Higher Customer Awareness: An increased number of computer users are becoming aware of the time and money saving benefits it provides.

Higher Scanner Penetration: Scanners prices have dropped drastically in the last few years with many flatbed grayscale scanners available for under \$500. Also, attractive, new scanner form factors (such as the small-footprint sheet-fed scanners) and multifunction devices have entered the market.

Increased OCR Accuracy: OCR developers have developed high accuracy OCR technology for increased output. The greatest improvement has been made on degraded and hard to read documents.

Improve Your OCR Accuracy and Save Big \$\$\$



OCR Market:

In the past, OCR required specialized hardware and OCR software that was often difficult to use and provided limited functionality. These issues were frustrating and limited the use of OCR to high-end vertical markets. The use of desktop OCR was limited to the "early adopters."

Increased OCR Accuracy:

OCR developers have developed high accuracy OCR technology for increased output. The greatest improvement has been made on degraded and hard to read documents.

Pricing and Availability

OmniPage Pro 7.0 (Windows and Mac) and WordScan Plus 4.0 (Windows) upgrade packages are immediately available at major resellers for an estimated street price of \$129.

The Company:

Caere Corporation, with U.S. headquarters in Los Gatos, Calif. and European headquarters, Caere GmbH, in Munich Germany, is a leader in OCR technology and desktop document management products. Caere has recently expanded its product line of OCR software.

Key Feature Comparison

Caere Corporation, with U.S. headquarters in Los Gatos, Calif. and European headquarters, Caere GmbH, in Munich Germany, is a leader in OCR technology and desktop document management products. Caere has recently expanded its product line of OCR software.

OmniPage Pro gives you almost twice the OCR accuracy with the same ease-of-use as OmniPage Limited Edition.

OmniPage Pro keeps text in its original format and layout, including graphics.

OmniPage Pro even outputs to HTML.

OmniPage Limited Edition

OmniPage Pro

Upgrade now to faster, more accurate OCR.

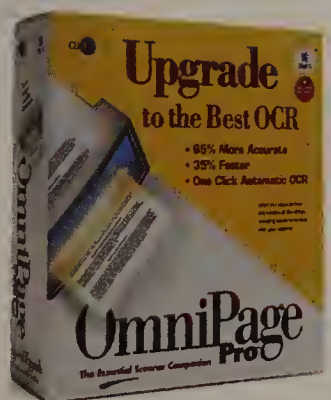
Sure, the OmniPage Limited Edition OCR that came with your scanner is good. In fact, that's why scanner makers like HP, Microtek and Agfa chose it above all others.

But if you want greater accuracy, full-throttle speed and a ton of new time-saving features, then it's time you moved up to OmniPage Pro®.

OmniPage Pro employs a new, more powerful OCR engine to recognize poor copies and degraded faxes. It integrates seamlessly with your favorite applica-

tions like Microsoft Word, WriteNow and more. It even guides you through the OCR process using its AutoOCR Toolbar. All with the simple push of a button.

What's more, you get the advantages of the world's most popular OCR software without learning an entirely new program. So make sure you're getting all the OCR power and accuracy you deserve. Visit a local reseller or our Web site today!



Now \$129*

Key Feature Comparison	OmniPage Pro	OmniPage Limited Edition
Caere's fastest and most accurate OCR engine	✓	
AutoOCR Toolbar™ for easy, one-button OCR processing	✓	
OCR Wizard to guide you through the process	✓	
Integrates with most image editors like Photoshop	✓	
OCR from within your favorite applications	✓	✓
Retains original layout	✓	

SPECIAL UPGRADE
FOR MORE INFORMATION OR TO ORDER, VISIT OUR WEB SITE AT www.caere.com/mw
FOR FAX BACK SERVICE CALL 408-354-8471



*Suggested price US \$—subject to change. Valid in US & Canada only. Caere, the Caere logo and OmniPage Pro are registered trademarks and AutoOCR Toolbar is a trademark of Caere Corporation © 1997. All other names are the property of their respective holders.

Circle 69 on reader service card

AnthroCarts!®



AnthroCarts are so flexible. You have **dozens of shapes and sizes** to choose, plus over **50 accessories** to configure your cart exactly the way *you* want.

And they have a **Lifetime Warranty!** Made of steel and high density particle board, these AnthroCarts are as tough as nails.

See them all in our catalog, then call us direct to order. We'll ship to you the very next business day!



Call for your
free catalog:

800-325-3841

6:00 AM to 6:00 PM PST, M-F



Anthro Corporation®
Technology Furniture®
10450 SW Manhasset Dr.
Tualatin, OR 97062
Fax: 800-325-0045
In Japan call: 03 (Tokyo)-3947-2735
www.anthro.com

Since 1984. Prices from \$299. For a lower cost line for the home, ask for our Compacta catalog. GSA contract. Available for OEM applications. Anthro, AnthroCart and Technology Furniture are registered trademarks of Anthro.

Macworld

DISPLAY ADVERTISING SALES

PUBLISHER	Matt Sweeney (415/978-3271)
NATIONAL SALES DIRECTOR	Steve Plevin (415/978-3138)
SALES DEPARTMENT ADMINISTRATOR	Eva Bosch (415/974-7310)
SALES/MARKETING COORDINATOR	Glenn Munlawin (415/974-7350)
WESTERN ADVERTISING DIRECTOR	Karl Elken (415/978-3155)
ACCOUNT EXECUTIVE	Christine Wong (415/978-3192)
NATIONAL ACCOUNTS MANAGER	Liz Pabón (415/978-3192)
SALES ASSOCIATE	Jessica Ross (415/267-1799)
NATIONAL ACCOUNTS MANAGER	Sara Culley (310/545-0646)
SALES ASSOCIATE	Margaret Level Green (415/267-4577)
EASTERN ADVERTISING DIRECTOR	Cynthia Ramsey (201/243-1197)
NATIONAL ACCOUNTS MANAGER	Paul Bonarrigo (508/370-0832)
NATIONAL ACCOUNTS MANAGER	Lisa Ladle-Wallace (800/779-5622)
ACCOUNT EXECUTIVE	Jo Zotterelli (516/277-4134)

CLASSIFIED ADVERTISING SALES

MACWORLD SHOPPER AND DIRECTORY	Niki Stranz (415/978-3105), Carol Johnstone (415/978-3152), Shannon Smith (415/974-7414)
ADMINISTRATIVE ASSISTANT	Nancy Galanty (415/978-3124)

RESEARCH

RESEARCH DIRECTOR	Linda Lawrence
SENIOR RESEARCH ANALYST	Phillip Hibbert

MARKETING

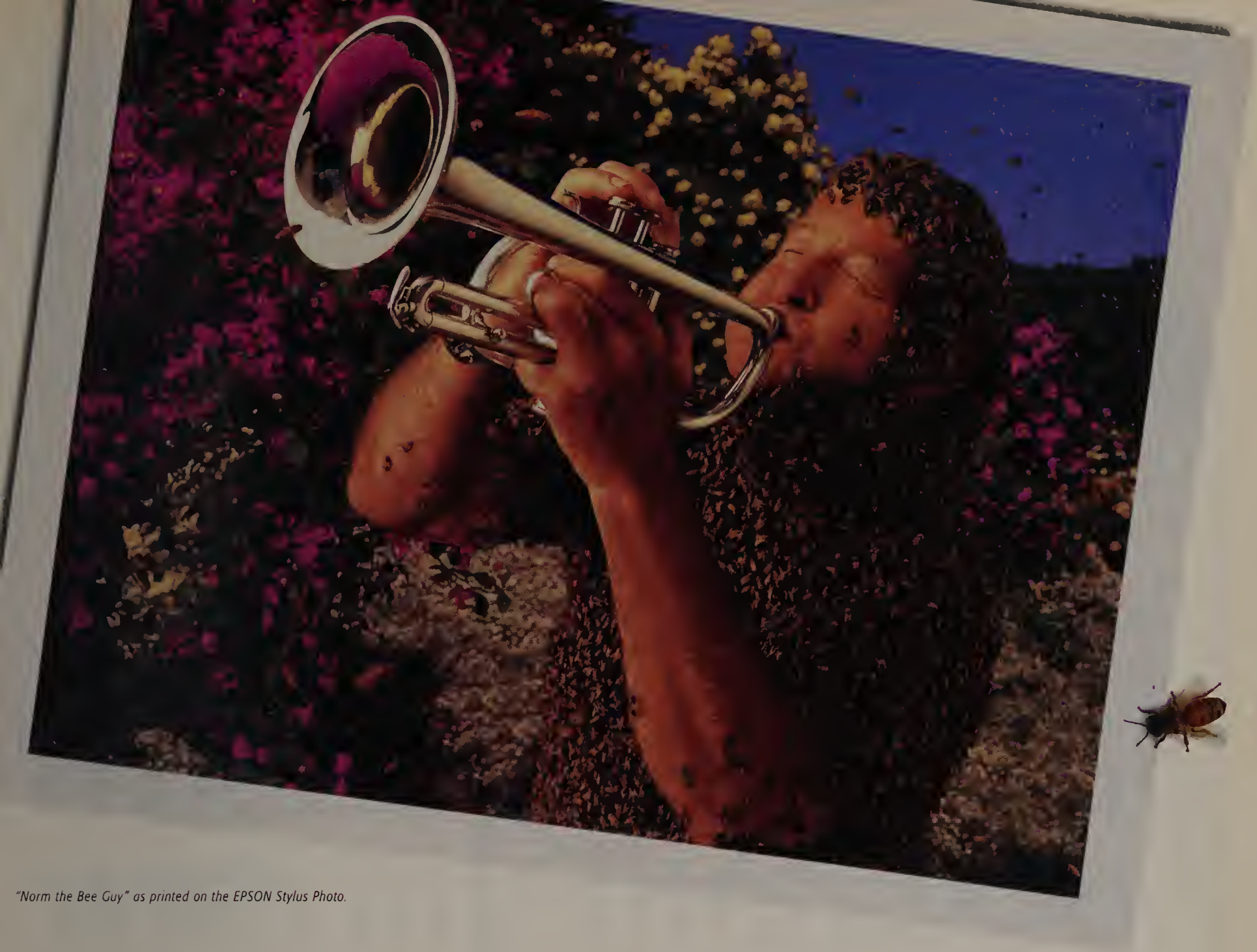
MARKETING MANAGER	Kelvin Gee
MARKETING MANAGER	Renée Bula
EVENTS MANAGER	Anna Noetzel
MARKETING COORDINATOR	Stephanie Walter

PRODUCTION

VICE PRESIDENT OF MANUFACTURING	Anne Foley
PRODUCTION MANAGER	Cynthia Neustadt
ASSISTANT PRODUCTION MANAGER	David W. McAferty
DTP COORDINATORS	Clayton Haberman, Brian Mullin

ONLINE

PUBLISHER	Jeff Julian
NATIONAL ACCOUNTS MANAGER	Ed Ramirez
ACCOUNTS MANAGER	Nicholas Harvey
MEDIA COORDINATOR	Jamila Johnson
EDITOR	James S. Bradbury
SHAREWARE EDITOR	Philip W. Dyer
ASSOCIATE EDITOR	Joanne Melken
PRODUCTION EDITOR	Roxanne Gentile
PRODUCTION MANAGER	Caius van Nouhuys
ASSISTANT CONTENT ENGINEER	Jessica Graves



"Norm the Bee Guy" as printed on the EPSON Stylus Photo.

INTRODUCING THE FIRST PRINTER THAT'S AS RELENTLESS ABOUT CAPTURING A PHOTOGRAPH AS YOU ARE.



It's called the EPSON Stylus[®] Photo and its virtually continuous tone printing treats your photo with the respect it deserves. How? With Micro Piezo[™] ink jet technology—the cleanest, most consistent way to get 6 colors of ink on paper. The results? Incredibly smooth gradations, amazing detail and perfect color. Now, nothing will stop you from getting a great print of your photograph. After all, nothing stopped you from capturing it. Not even a swarm of hungry bees. For more information, call 1-800-GO-EPSON and ask for Operator 3010. Or visit www.epson.com.

VIRTUALLY CONTINUOUS TONE 6 COLOR PRINTING / 720 X 720 DPI / FULL MAC & WINDOWS COMPATIBILITY / \$499*

*Street price may vary EPSON and EPSON Stylus are registered trademarks of Seiko Epson Corp. Micro Piezo is a trademark of Epson America, Inc. ©1997 Epson America, Inc.

YOU'VE GOT TO SEE IT IN

EPSON

COLOR.

**In Ziff-Davis Lab bench tests
THE FASTEST MAC WEB SERVER
Up to 300% faster than WebSTAR!**

**Supports more CGIs
than any Web Server
on any platform**

**The only Mac
Web Server with:**

- True Virtual Hosting of Multiple Domain Names
- Native Perl CGI Support
- Enhanced TCP Support
- Proxy Service

WEBTEN

**Introducing the New Standard in
Power Mac Web Serving
and a brand-new threat to wintel Web servers**

POINT-AND-CLICK APACHE

WebTen's blistering speed on PowerPC puts Mac squarely on the field against the fastest NT and UNIX boxes, affirming Tenon's absolute commitment to making the Macintosh a world-class Web server.

Apache is the most popular Web server in the world. More than 700 thousand Web servers on the Internet are Apache. Tenon has taken Apache and added a generous helping of Apple's point-and-click technology to create the world's easiest Apache to install and maintain. So now, for the first time, you can take advantage of the latest Internet technology without having to wait for home-grown and add-on Macintosh work-alikes. Join the masses on the Internet who are using a full-featured Apache Web server for seamless 'true' virtual hosting, remote administration, proxy service, and built-in WebObjects compatibility. Experience industrial-strength Web serving power from the comfortable space of MacOS.

With Tenon's Macintosh extensions to Apache, you can have the best of both worlds; standard Internet CGI and WebObjects support, and the complete suite of popular Macintosh plug-ins and AppleScript CGIs. In fact, WebTen supports the widest selection of plug-ins and CGIs of any Web server available. WebTen's feature-loaded, browser-accessible Administration Server gives you instant, point-and-click control over the complete array of Apache server settings.

The Web is a constantly evolving place where time is measured not in months or years, but in 'Web weeks'. Web technology is moving at a breakneck pace, so become part of the largest body of Web server development on the Internet and take advantage of the work of hundreds of Web developers, all joined in the common pursuit of creating the best Web server on the planet. Why continue to be behind the Web curve? Move up to the very latest Web server technology.

Tenon's WebTen

You owe it to yourself
and your clients to
purchase a copy today.



TENON
INTERSYSTEMS

1123 Chapala Street Santa Barbara CA 93101
tel 805-963-6983 fax 805-962-8202

Details and a trial version available at **www.tenon.com**

Send email inquiries to **info@tenon.com**

Call 1-888-2-WebTen

© 1997 Tenon Intersystems. All rights reserved. Tenon and WebTen are registered trademarks of Tenon Intersystems in the United States and/or other countries. Mac OS is a registered trademark of Apple Computer Inc. WebSTAR is a registered trademark of Quarterdeck Corporation. All other trademarks are held by their respective companies. WebTen includes software developed by the Apache Group for use in the Apache HTTP server project, and Squid which is derived from the Harvest cable software, developed by the ARPA-funded Harvest research project.



Macworld

HOW TO CONTACT MACWORLD

Subscription Questions

Phone	303/665-8930
Fax	303/604-7455
U.S. Mail	Subscription Services P.O. Box 54529, Boulder, CO 80328-4529
America Online	Keyword Macworld
World Wide Web	www.macworld.com/ community/sub.services.html
E-mail	subhelp.macworld@neodata.com

Reprints and Permissions

You must have permission before reproducing any material from *Macworld*. Write to Macworld, Reprints and Permissions, 501 Second St., San Francisco, CA 94107; include a phone number. To order reprints of your company's editorial coverage, call 800/217-7874.

Back Issues of Macworld

Back issues are \$7 per issue for U.S. delivery (\$12 overseas); prepayment in U.S. funds is required. Make checks or money orders payable to Macworld Magazine and mail along with a written request to Macworld Back Issues, c/o Synder Newell, P.O. Box 7046, San Francisco, CA 94120-9727. Readers can obtain newsstand premiums by mailing a check for \$2.95 (for shipping and handling) to Macworld, Newsstand Promotions, 501 Second St., San Francisco, CA 94107; please state CD title and issue, and include your name and address for shipping.

Macworld in Microfilm

Macworld is available on microfilm and microfiche from UMI, 300 N. Zeeb Rd., Ann Arbor, MI 48106-1346; 313/761-4700.

Macworld Editorial

The editors of *Macworld* welcome your tips, compliments, or complaints. We are unfortunately unable to look up stories from past issues, recommend products, or diagnose your Macintosh problems by phone, e-mail, or fax. Contact Apple toll-free at 800/538-9696, ext. 500, for information on user groups in your area.

Our offices are located at 501 Second St., San Francisco, CA 94107; 415/243-0505, fax 415/442-0766.

LETTERS TO THE EDITOR Direct all comments and suggestions regarding any aspect of the magazine to letters@macworld.com. Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all submissions. All letters published in *Macworld* or Macworld Online become the property of Macworld.

QUICK TIPS Send your questions or tips on how to use Mac computers, peripherals, or software to the attention of *Macworld*, Quick Tips, 501 Second St., San Francisco, CA 94107; fax 415/442-0766; e-mail quicktips@macworld.com. Please include your name, address, and telephone number.

Macworld is a publication of Mac Publishing L.L.C. Macworld is an independent journal not affiliated with Apple Computer, Inc. Macworld, MacUser, MacWeek, Macworld Interactive, Macworld Shopper, MW, MW Lab, MW Shopper, The Desktop Critic, Expert Graphics, Quick Tips, Star Ratings, Buyers' Tools, Streetwise Shopper, and Conspicuous Consumer are registered trademarks of Mac Publishing L.L.C. Apple, the Apple logo, Mac, and Macintosh are registered trademarks, and MacLetter and PowerBook are trademarks, of Apple Computer, Inc. Printed in the United States of America Copyright © 1997 Mac Publishing L.L.C. All rights reserved.



Circle 76 on reader service card

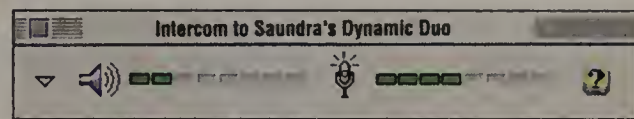
1

Move up to 4.0

This upgrade gives you more remote control firepower than ever. Now you can connect, communicate and collaborate seamlessly when you're in the office or on the road.

2

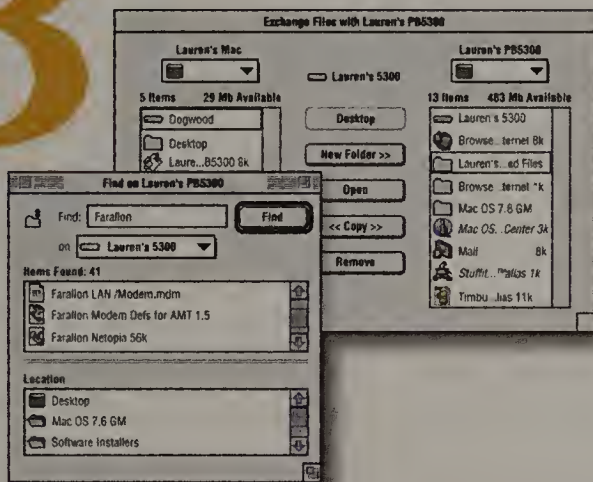
Speak freely



Have real-time audio conversations with the new built-in intercom.

Transfer faster

You can transfer files over the Internet without getting into a bottleneck. 4.0 cuts transfer time in half.



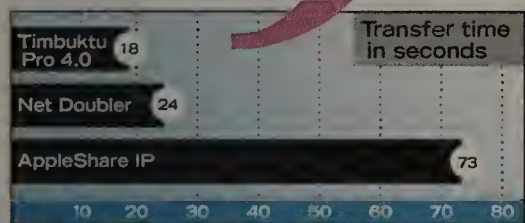
Automate

AppleScript record and playback makes short work of everyday operations. Synchronize files on multiple computers with one-click ease.

What more can I do with my Timbuktu?

5

Save time



20MB file transfer comparison over 100MB Ethernet

Dare to compare. Timbuktu Pro's Express technology beats them all.

6

1-800-678-5075

Phone and mail orders are \$39.95. Simply call the number above or mail in the coupon included with this ad.

Or, save money and download your upgrade for only \$29.95:

www.farallon.com/upgradetb2.html

Farallon®

2470 Mariner Square Loop, Alameda, CA 94501-1010
510-814-5000 Fax: 510-814-5023 <http://www.farallon.com>

*Hurry! Limited time offer. Prices subject to change.

7

Order today*



☐ Yes! Send me Timbuktu Pro 4.0

Send in your check for \$39.95 per copy (plus appropriate tax) and \$9.95 for shipping and handling to "Farallon Upgrade Dept." at the address on this ad.

Name (Please print clearly)

Company Name

Address (No P.O. boxes please)

City State Zip

Phone

VIP CODE 421



Dream Machine.

Not The Bike.

The Digital Color Copier.

Aficio Color™ 2003

Digital Color + Productive B & W

Unique optional embedded Fiery

Network printer-scanner option

Prints up to 11 x 17 format



**\$14,895. A Digital Color Copier For
Every Department, Every Company.**

Brilliant color every office can afford.

Don't send out for expensive copies.

Experience the productivity of easy,
digital features for thousands less.

Get a demo of the kind of colorful
future your office can enjoy, from
the #1 maker of digital copiers
in the USA. Call 800 63 RICOH.

Online www.ricoh-usa.com



RICOH®
Image Communication

Circle 4 on reader service card

INTRODUCTORY OFFER

\$39



Powerful **MAGIC** To Maximize Disk Space

Introducing the easiest way to conjure up more disk space on any drive. **STORAGE WIZARD™** is carefully designed to save the important files you need and archive the ones you don't. As your drive fills up, it silently makes a list of files you no longer access. Then it acts on your behalf to move, compress, delete, or just organize this dormant data. When you need an old file, just click on its icon (yes, it's still there), and Storage Wizard auto-

matically retrieves it from your server, Zip™, Jaz™, SyQuest™, MO, or any other Finder mountable storage device. Or, command Storage Wizard to pinpoint archive candidates—change their labels, move them to a specific folder, or simply print a list. It's your call. Start saving time and money today when you get this magic space maker for only \$39*! From the magicians who bring you the **TOOLKIT** family of storage management software.

TO ORDER
CONTACT YOUR LOCAL RESELLER OR CALL:

MacWarehouse: 1-800-255-6227

MacZone: 1-800-248-0800

MacMall: 1-800-222-2808

Order Online at <http://www.cybout.com>



#1 in Storage Management.™

MW ★★★★★

"... a transparent way to keep all your drives lean and mean."

—Macworld Magazine
October, 1996



Circle 34 on reader service card

* Special introductory price based on \$59 purchase price and \$20 in-box manufacturer's rebate. Price may vary. Allow 4-6 weeks for processing. Offer valid to U.S. and Canadian customers only. Offer expires October 31, 1997 or while supplies last.
© 1997, FWB Software, LLC. FWB is a registered trademark of FWB Software. Storage Wizard and Rule Wizard are trademarks of FWB Software. Formerly HSM ToolKit. Mac and MacOS are trademarks of Apple Computer, Inc. and may be registered in certain jurisdictions. All other trademarks are property of their respective owners. All rights reserved. Specifications subject to change without notice.

Letters

Another Windows User Sees the Light

I AM VERY EXCITED TO BE HOLDING MY first subscribed issue of *Macworld*. I even ordered my subscription on your easily navigated Web site, and I am impressed with the layout of your magazine even more. Thumbs up to all the women and men who make *Macworld* magazine a top-notch pleasure to read.

In a few weeks, I will have my first Mac, specifically a PowerCenter Pro 180. The exciting part is that I was a Wintel user (I can't believe I typed that!) and still am, until my system gets here.

Basically, after researching the Macintosh for six months, reading various reviews and opinions on the Web and in articles, and having numerous problems with my current PC, I decided to convert to the "good" side of the force—er, I mean computing. Chalk up one more Mac convert on the board. It's a pleasure to be with the winning team.

JOHN DOWNING
via *Macworld Online*

It's a pleasure to have you. Welcome aboard. For those of you who aren't enjoying the benefits of Macworld, as Mr. Downing points out, you can subscribe via Macworld Online (www.macworld.com).—Ed.

Notable, Portable, and Storable

STORAGE TO GO" WAS VERY INFORMATIVE and loaded with detailed specs to back it up (August 1997). However, using most of these drives on a daily basis has brought to my attention other issues that were not mentioned in your tests.

I realize that lab tests indicate that Zip drives have half the speed of some other media types, but in the real world I can



pull a large photo off a Zip and have the Zip back on the shelf faster than most other types can even be mounted.

RIK HOCKING
Aliso Viejo, California

Rhapsody for Bill?

I NEVER THOUGHT APPLE WOULD BE marketing its operating system to the Wintel world. It seems rather odd to me. However, it is going to happen.

What astonishes me even more, though, is the huge emotional response coming from Mac OS users. The same people who are supporting Apple one day are having a fit the next—all because Apple has made a decision to broaden its target market.

Think about it from a business point of view. Apple pays a little more money for the Windows compatibility than what it was already going to pay to develop its new OS. Subsequently, it'll have a prod-

uct that will cover 99 percent of the computing market, as opposed to 35 percent or so. Yet I still see people in newsgroups proclaiming Apple Computer a traitor to its own kind. These are strong words.

We have all seen the reports. Apple was, and still is (though not to the same extent), in some economic trouble. By producing a product that could be the biggest-selling piece of computer software since DOS, Apple is not turning its back on its supporters, but rather looking out for them.

One might speculate that the continuation of the Mac OS depends on its being popular in the PC universe.

JON CRAIG
Bowling Green, Kentucky

I THINK THAT RHAPSODY FOR INTEL IS A bad idea. Its existence would be dangerous to all Mac makers. Why would PC users want to switch to Macs if they can use all of the new Mac software on their Wintel platforms? The Blue Box isn't the answer because if that was the case, Windows wouldn't be ahead in market share. The hardware isn't the answer either, for the same reason.

I understand why a cross-platform operating system would be useful to developers, but the Windows 95 and NT versions of Rhapsody would allow developers to create Rhapsody applications for PCs without the need for the additional Intel version.

Apple should drop the Rhapsody for Intel project and concentrate on the rest of Rhapsody. Rhapsody programs would still work on Intel-based machines, but Rhapsody for Mac would have the performance advantage.

GARTH WALLACE
via *Macworld Online*

continues

CLEMENT MOK

Information Architect
Studio Archetype, Inc.

Clement Mok is an idea guy. As creator of award-winning corporate identities and design solutions for companies like Microsoft, Twentieth Century Fox, Herman Miller, as well as Apple Computer, ideas are the capital of his three companies. Whether he's creating a cyber theme park, compiling tons of stock photos, or designing the elaborate kingdom of Valhalla for the local opera, his ideas need space. Big space. Which is what he gets with the 1 gigabyte Jaz® drive.

So while his office resides in San Francisco's warehouse district, his ideas reside on handy, removable Jaz disks. Check out more of Clement's story at www.4inchesquare.com/mac.



Super-Fast, Extremely Vast
PERSONAL HARD DRIVE.



"How I fit 5 Fortune 500 companies,
a warehouse full of big ideas, and the
entire kingdom of Valhalla into a
4 INCH SQUARE."



BECAUSE IT'S YOUR STUFF.™

CORRECTIONS

- *Shockwave movies made in Macromedia's Flash do not stream as they download* (Reviews, September 1997).
- *The G3 Arthur CPU, also called the PowerPC 750, is made by IBM ("275MHz Mac Powerhouse," September 1997).*
- *APS Technologies can be reached at 816/483-6100, and DayStar Digital's phone number is 770/967-2077* (Mac Superguide, September 1997).
- *The NT module, Services for Macintosh, must be turned on via the NT server's network control panel ("Macs Can Thrive in an NT World," News, July 1997).*

Two Modems Are Better than One

IN THE AUGUST 1997 ISSUE, YOU LISTED "Ten Ways to Recycle Your Mac." Number five was to connect a group of modems together and attach them to a Mac to handle overnight downloads from the Internet. You called this multiplexing. Can you give me some more information on multiplexing? Some instructions on how to do it would be helpful, including what hardware-software combination I need.

ZACK M. BROCK
Hilliard, Florida

You need three things. First, your Mac must support multipoint PPP. You can find out by checking the documentation that came with your machine. Second, you need two or more phone lines. Each phone line must have a dedicated modem. Third, you need an ISP that supports multipoint PPP. You can call your ISP directly to find out. If it doesn't support it, you may be able to get a UNIX shell account (many ISPs offer these) and pair it with a freeware solution called Slirp to create the same effect. For more information on Slirp and how to multiplex, check out ucnet.canberra.edu.au/slirp/, www.phoneboy.com/slirp/, and www.56k.com/reports/bonding.shtml.—Ed.

Insanely Great Ads from 15-Year-Olds

I JUST SAW THE WINNING ENTRIES OF Apple's "Making Dreams Come True" contest. The contest centered around Mac owners' using their Macs to create 30-second spots showcasing the advan-

tages of the Macintosh platform. After seeing all nine of these winners (three winners each in three categories: under 15, amateur, and professional), I have to conclude that Apple has done a terrible job of advertising.

Any one of these nine ads was infinitely superior to any ad I've seen from Apple (with the possible exception of the "1984" ad). These ads show real people using the Macintosh in real-world applications, and are done exceptionally well, even the under-15 ads.

Why doesn't Apple clean these ads up and start using them for TV spots? Just think of the headlines: "A Computer So Easy to Use, a 15-year-old Created This 30-Second TV Ad with It . . ." With all of Apple's advertising woes, an ad campaign like that could save a lot of money and get a lot of *good* exposure.

TED LEE
Norcross, Georgia

eMate Expansion Explained

THE EMATE 300 DOES PROVIDE USERS with a way to expand its memory by adding SIMM RAM to its internal RAM slot (Reviews, August 1997). You can buy this kind of special SIMM from Newer Tech (316/943-0222, www.newertech.com). This way, you don't have to sacrifice the only PC Card slot the eMate 300 has.

WEN-YU CHANG
San Jose, California

Take a News Break with Macworld

I REALLY ENJOY YOUR NEWS-BREAK broadcasts. I know they must cost some money to produce and maintain, but if you could increase the content through more interviews with your staff or other guests it would be appreciated. I love to listen to them while paying bills or surfing, and they seem to have become shorter recently. Anyway, I appreciate them. Thanks for the effort!

JAY BONNER
Eustis, Florida

If you haven't visited our Web site recently, you've been missing out on the newest feature of Macworld Online. Every week we bring you a recorded interview—in RealAudio format—with one of our editors or with a special guest.
continues



4-inch, 1 gig Jaz cartridges
for as low as \$89.95.*

HIGH-PERFORMANCE BACKUP

- Back up one gig in as little as 10 minutes
- Free 1-Step™ backup software backs up as much as 2 gigs (compressed)
- Run your entire system straight from your Jaz® drive to instantly recover from hard disk crashes

HIGH CAPACITY MEETS INSTANT ACCESS

- Run applications and files straight from disk
- Access time: 15.5ms read/17.5ms write
- Average seek time: 10ms read/12ms write
- Sustained transfer rate: 6.62MB/sec. max
- MTBF: 250,000 hrs.

HUGE FILES TO GO

- 1-gigabyte 4-inch disks fit in your pocket
- Portable external drives fit easily in your briefcase—internal drives also available
- Traveller and Jaz Cards make laptop use easy

PC AND MAC COMPATIBLE

- Windows 95, NT, and 3.X, Mac, DOS, OS/2
- IRIX and Solaris also available from Rorke Data

HOW TO CONNECT:

- Jaz Jet™ SCSI PCI \$99
- Jaz Jet SCSI ISA \$89
- Jaz Traveller (Parallel Port) \$49
- Jaz Card (PCMCIA) \$125

VISIT WWW.IOMEGA.COM
or see your reseller.



\$399 EXTERNAL



*When purchased in 10-packs. Prices listed are estimated street prices. Actual prices may vary. 1-Step and Jet are trademarks of Iomega Corporation. Windows 95 and Windows NT are trademarks of Microsoft Corporation. Mac is a trademark of Apple Computer, Inc. All other trademarks are property of their respective holders.

Hear the latest about the Mac market, new technology, and developments at Apple from the people who know the most about it, at www.macworld.com.—Ed.

Of Upgrades and Utility Vehicles

I READ WITH GREAT INTEREST DAVID Pogue's recent article "The Software-Upgrade Paradox" (*The Desktop Critic*, August 1997). He asserts that Microsoft's move to a gargantuan Word version 6.0 divided users into two camps. Literary brevity is a necessity, but I'm sure Mr. Pogue recognizes that there are actually three camps: those who upgrade, those who don't, and those who switch.

The subtext of the article is very clear: Microsoft knows that it can act with impunity, and the masses must follow. I am very sorry to say it, but it seems that with Communicator Netscape is on the same road.

Faced with the choice he noted (step up to the lane-wide, road-hog, RAM-guzzling 6.0, or continue to cruise in my utilitarian 5.1 model), I did what many consumers do. I shopped, and ended up buying a foreign model, WordPerfect, and I'll never go back.

KELLY M. MCDANIEL
Austin, Texas

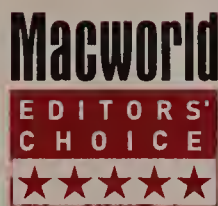
DAVID POGUE SAYS, "WHY ARE WE BUYING [all-terrain sport-utility vehicles]? Don't tell me it's just in case a flash flood washes out the road to the grocery store." Well, I drive a Toyota Rav4, a mini sport utility vehicle that gets excellent mileage, handles like a dream, and incidentally was the only vehicle to weather a flood and make it to work with myself and everyone else whose cars were underwater. Oh yeah, it sports a Mac sticker too.

SUNIL RAJAN
Ann Arbor, Michigan

Letters should be sent to *Letters*, Macworld, 501 Second St., San Francisco, CA 94107; via fax, 415/442-0766; or electronically to CompuServe (70370,702), MCI Mail (294-8078), America Online (keyword *Macworld*), AppleLink (*MacworldI*), or via the Internet (letters@macworld.com). Include return address and daytime phone number. Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of Macworld. **m**

Buy Smart with Editors' Choice.

MACWORLD EDITORS' CHOICE



To buy smart when choosing Macintosh hardware or software, you need an expert's opinion.

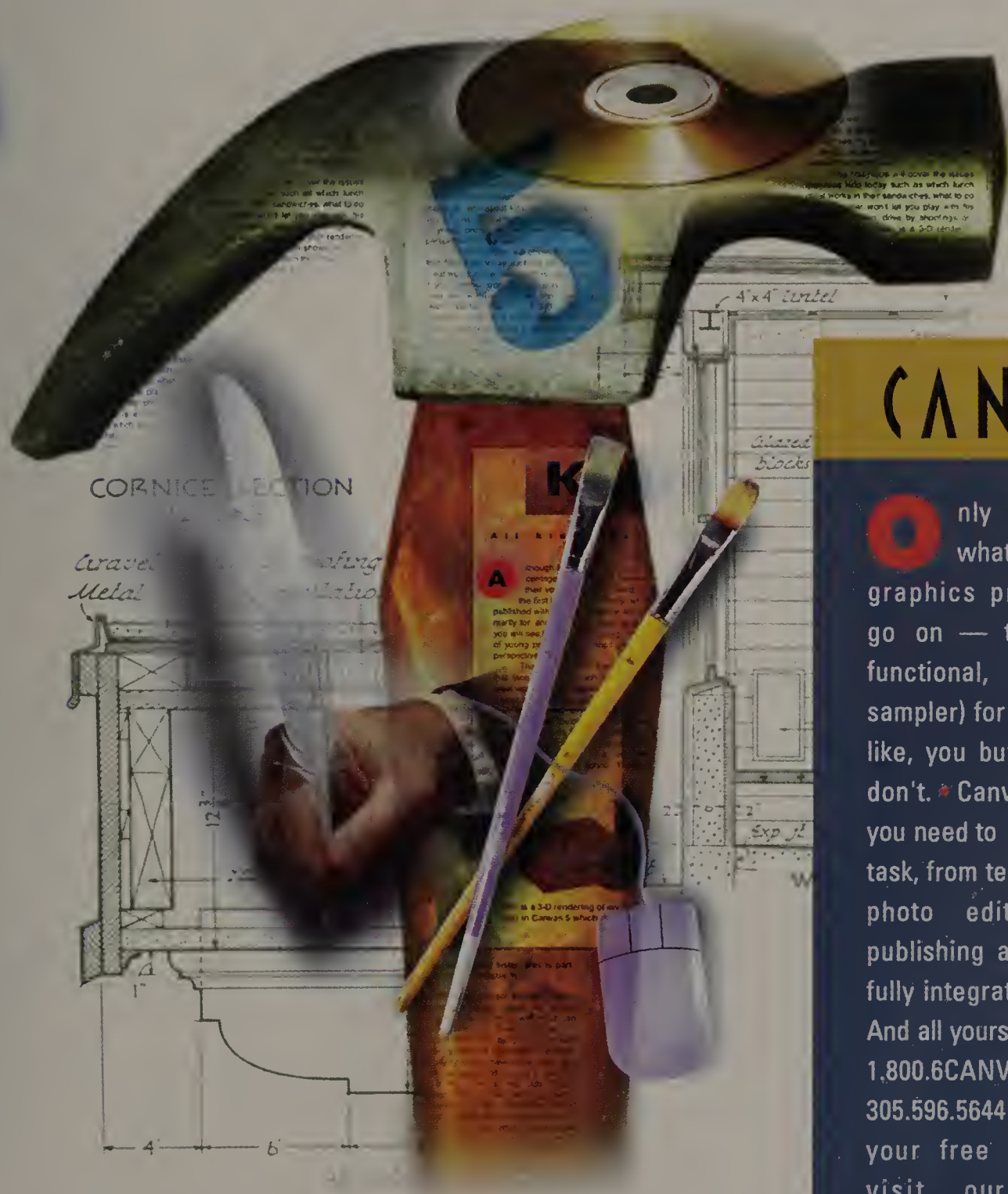
Fortunately, the experts at Macworld are more than willing to give you theirs. Just leaf through the pages of this issue — or any issue of Macworld. Wherever you see Editors' Choice, you can be sure the product has passed the most rigorous tests for performance and quality in its class. And comes out a winner.

Our reviewers scrutinize just about every Mac product that hits the market. If it wins us over, you can't go wrong.

Macworld
THE ESSENTIAL MACINTOSH® RESOURCE

The World's First Do-It-Yourself Ad.

Rather than try and sell you on
Canvas 5, we invite you to sell yourself with
a 30 day free trial offer.



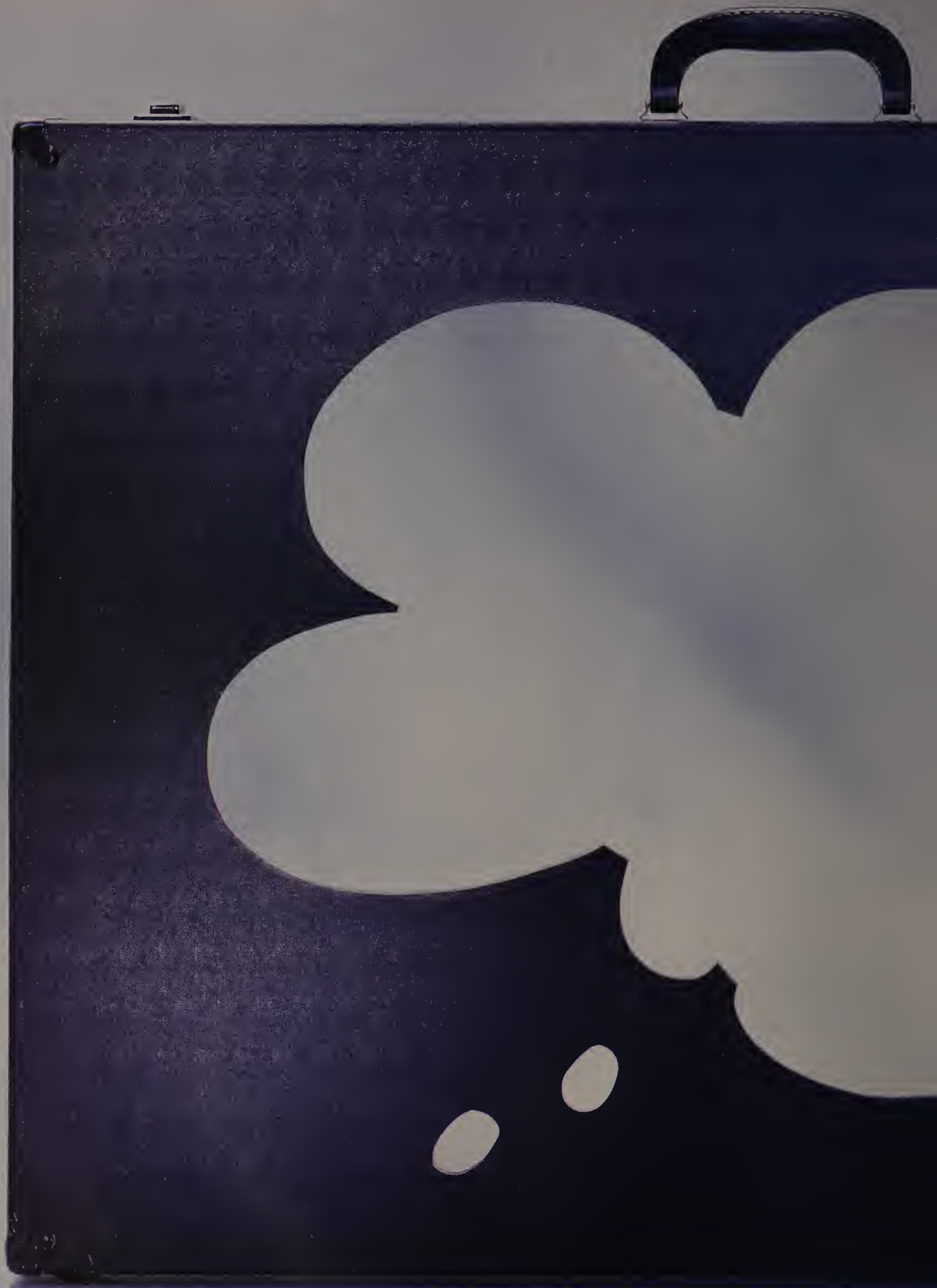
CANVAS 5

Only one person knows what you want in a graphics program: you. So go on — try Canvas 5 (fully functional, not some weenie sampler) for 30 days, free. If you like, you buy. If you don't, you don't. Canvas 5 has everything you need to tackle any graphics task, from technical drawing and photo editing, to desktop publishing and web design. All fully integrated. All easy to use. And all yours for the asking. Call 1.800.6CANVAS (622-6827) or 305.596.5644 ext. 2, and ask for your free Evaluation CD or visit our web site at www.deneba.com/macworld/ to download it gratis. And if you've already sold yourself, visit your favorite reseller or call us and pick up a copy today.

© Copyright 1997 Deneba Software. Limited time offer valid only in North America.
This ad was made using nothing but Canvas 5. Any questions?



Circle 57 on reader service card



**IMAGINE
BEING JUDGED
ON YOUR
IDEAS, NOT
JUST YOUR
COMPS.**

You have a big idea. We have a big family of color printers. You need to print your idea out as a four-color, 11" by 17" bleed. On 125 pound tag board. And you need it fast. Well, whether it's our \$4,995* Phaser® 300 or the new Phaser® 380, you'll get the same vibrant, photo-realistic Tektronix® color that satisfies even the fussiest designers. So if you're printing loose comps or final output, postcards or posters, about all you have to do is hit on a big idea, then hit <Control-P>. Because if you can dream it up, we've got a way to get you there.

To judge for yourself, call 1-800-835-6100 ext. 1519, or visit www.tek.com/CPad?1519



Tektronix®

NEW VERSION!

MiniCAD[®] 7

Windows[®]/Macintosh[®]

The Easiest, Most Cost-Effective Way to Design

For more than a decade, professionals seeking an out-of-box CAD solution have selected the award-winning MiniCAD. This stand-alone program lets you create everything from precise working drawings to sophisticated client presentations



tries—multi-decimal accuracy for precise drafting, a built-in database/spreadsheet to track costs and materials, extensive

library of industry-specific symbols, cross-platform compatibility (Mac and Windows), and a macro programming language for automating complex and routine tasks.

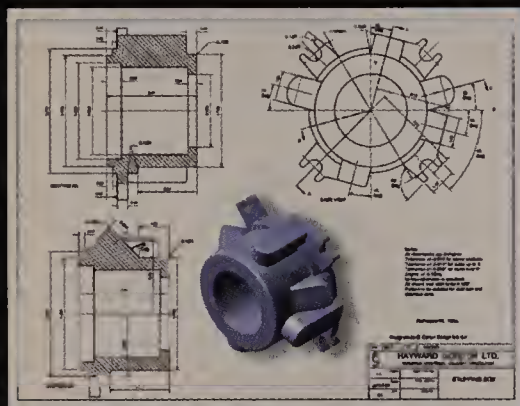
Now this total CAD solution speeds your design process with these new features:

- True 3D Boolean Solid Modeling
- DWG and DXF Import/Export
- Dual-Unit Dimensioning
- Auto Wall Framing
- QuickDraw 3D Rendering
- Associative Hatching
- Automatic Wall Joining
- Next-Generation SmartCursor

- Precise Sun Positioning
- Expression Evaluation Inside Textboxes
- Automated Databases/Spreadsheets
- Multi-Decimal Dimensioning
- Rotatable Grid and Customizable Coordinate System
- Plus Dozens of Performance and Interface Enhancements

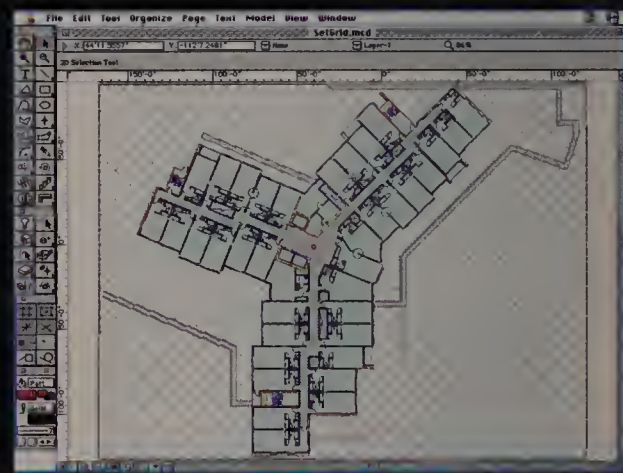
To learn more about MiniCAD's extensive feature set and why the program has been called "the easiest, most cost-effective way to design," call 1-888-MINICAD or visit our Web site: www.diehlgraphsoft.com

MiniCAD 7, which retails for a suggested price of \$795, comes with 18 months of FREE Tech Support and a 30-Day Money-Back Guarantee!

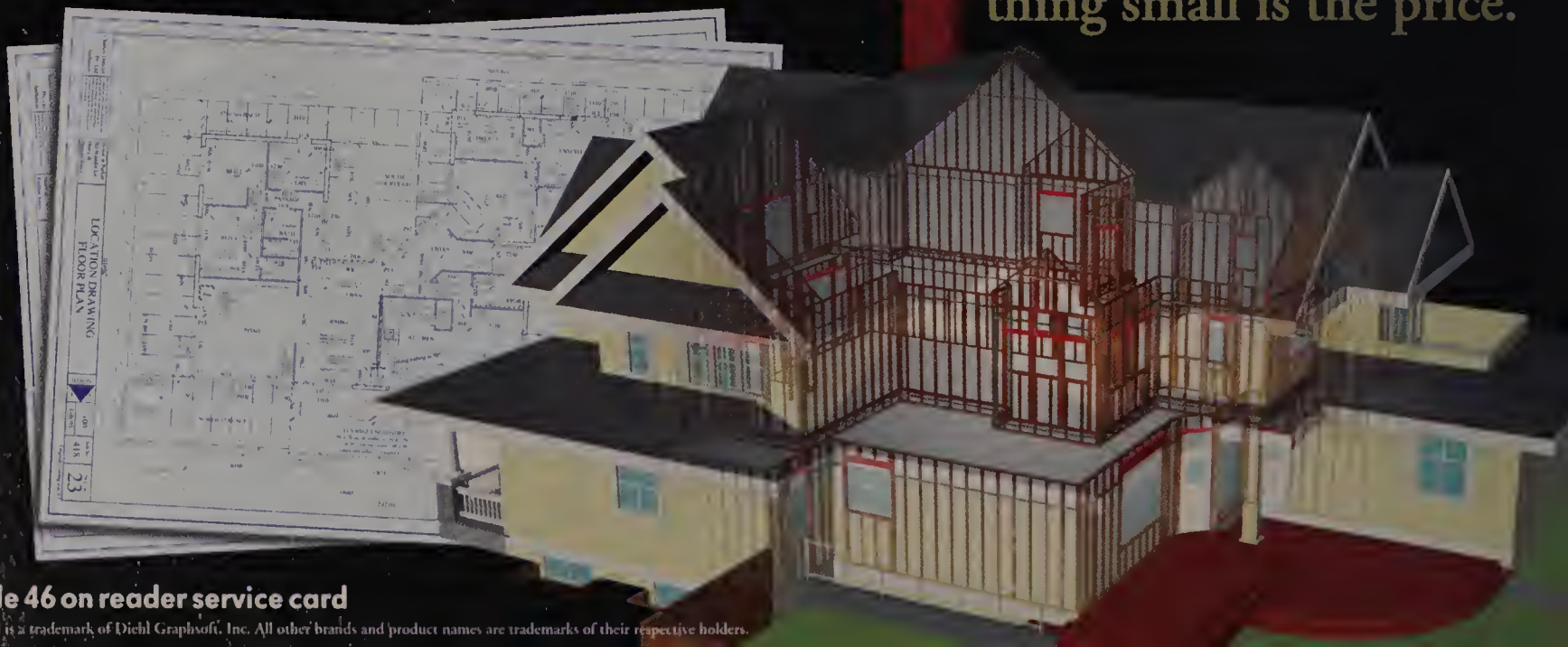


to extensive materials lists and cost estimates.

As always, MiniCAD 7 offers the same core features that have made it the program of choice for design professionals in more than 80 coun-



MiniCAD 7—The only thing small is the price.



Circle 46 on reader service card

MiniCAD is a trademark of Diehl Graphsoft, Inc. All other brands and product names are trademarks of their respective holders.

The Vision Thing

by Andrew Gore

Apple's Choice

FACED WITH TWO UNPLEASANT ALTERNATIVES, APPLE MADE THE RIGHT CHOICE

IF SOMEONE HAD TOLD ME A month ago that I'd be writing the editor in chief's column for *Macworld*, I would have nodded and asked, as nonthreateningly as I could, how long they'd been off their medication.

Of course, rapid and improbable change seems to be the order of the day. Take, for example, Apple's decision to buy back Power Computing's Mac OS license. While not exactly unexpected, this move was nonetheless a shock for Macintosh users who have come to view Power Computing as a singular force for good on the Mac platform. In a few short years, Power Computing has built a reputation for offering innovative products at a reasonable price, and offering them with the unabashed showmanship of a carnival barker.

With Power Computing, the Mac OS wasn't just good, it was the best, no excuses and no apologies. The company did wonders restoring Mac customers' faith in the platform and in their own decisions to stand by their Macs. And while much of this could be attributed to the gonzo marketing the Power Computing name became synonymous with, in a very real sense style became substance as Power Computing helped Mac users realize there was nothing so seriously wrong with their Macs that a little positive PR couldn't help make better.

However, despite all the positives Power Computing brought to the table, there was an unpleasant reality just below the surface that few of us wanted to face. Sometimes I think we Mac advocates are like the managers of a hotel where a skunk has died in the crawl space. Instead of just fessing up to the guests that their rooms smell like something just died because in fact something has, we point out the amenities, the restaurant's five-star menu, or the lovely view. The fact is, Power Computing has done little to expand the market. Worse, due to a series of mistakes

made in how Apple constructed the Mac OS licensing program in the first place (see our story in *News*, page 30), Power Computing was taking business away from Apple, business that represented the most profitable part of Mac sales—the high-end—that Apple relies on to pay the bills for Mac OS development. And for all that, Power Computing wasn't making money; and we all know about Apple's economic fortunes over the last year.

This wasn't Power Computing's fault. The company competed effectively based on the rules spelled out by Apple. It was just unfortunate that Apple didn't foresee how the market would evolve, and build a sustainable licensing program. Whatever mistakes were made, in the end Apple was faced with a "Sophie's choice": either continue licensing in a market climate that couldn't support it, or end licensing and face the wrath of customers who were promised choice and were now having it taken away.

I believe Apple made the right decision. Like it or not, Apple is the Mac, and as improbable as it may sound, if the company doesn't make some hard choices to shore up its financial performance now, Apple could easily take the Mac OS down with it. And that, I think we can all agree, would be a very bad thing indeed.

Now under Construction

Which brings me back to, well, me, and the improbable place I find myself in. Many of you reading this, I know, are devotees of *MacUser*; still others are part of *Macworld*'s loyal contingent. The question I imagine both publications' readers have is what exactly is happening to your favorite magazine.

Here's the scoop. After more than a decade of fierce competition for the hearts and minds of Macintosh users everywhere, *Macworld* and *MacUser* have decided to join forces to create the most comprehensive, most authoritative Mac monthly ever. The new magazine, which will be called *Mac-*

world, combines the best elements of both publications, plus a liberal sprinkling of new ideas, to create the greatest single source of inspiration and information on the Macintosh experience.

What you hold in your hands is the first issue featuring the editorial of both magazines—although rest assured, it is only the beginning. The new *Macworld* is now officially under construction. And I firmly believe that with the combined skills of the two best editorial teams to ever work in the Mac market, the best is yet to come. I just want to thank *Macworld*'s and *MacUser*'s outgoing editors in chief, respectively Adrian Mello and Pamela Pfiffner. Thanks, guys, for helping to create a great foundation for us to build our new *Macworld* on.

An Open Invitation

And that's what we at the new *Macworld* are dedicating ourselves to: building the best publication possible from the considerable assets of two great Macintosh magazines. We know we can't do that alone—to be our best means to serve our audience's interests in the best ways possible. To that end, we want you, our readers, to be our partners as we move forward and start building this great new publication, that just happens to have a familiar name.

To that end, we've set up an e-mail address to which you can send your suggestions and observations. Is there something you've come to depend on in the pages of *Macworld* or *MacUser* that you just can't live without? Let us know. Is there something we haven't done that you always wished we would? Well, now's your chance. Just e-mail us your comments at visionthing@macworld.com.

While we may not be able to implement them all, we will give your suggestions serious consideration. In today's fast-evolving Macintosh market, the best way to ride the wave of change is to work together to exploit the opportunities change presents. **m**

What can you do without film?

Digital Still Camera

Model#: DSC-F1

\$599.99



Specifications

- Small size (4" x 3" x 1.6") and light weight (9.9 ounces, excluding batteries)
- Built-in 1.8-inch LCD screen lets you instantly preview and delete pictures
- Progressive Scan and Square Pixel CCD ensures exceptional picture quality
- 4 MB Internal Flash Memory stores up to 108 high-quality images (640 x 480 pixels)
- Infrared wireless technology lets you transfer images directly to your PC or to Sony's DPP-M55 Digital Color Photo Printer
- ArcSoft PhotoStudio® DSC image manipulation software lets you modify your shots
- Standard video output connects to a TV or video monitor—and works as a portable presentation device
- Four Creative Recording modes
- Built-in flash for low light situations
- Integrated rotating camera head (180°)
- Automatic or manual exposure and shutter speed
- Macro mode for close-up shots
- Digital Date/Time Stamp
- Rechargeable Lithium Ion battery
- 6V AC Power Adapter (supplied)
- Windows® and Macintosh® connectivity kit

SONY

A lot.

Capture an image and use it. Right now.

What does it mean to have the award-winning Sony Digital Still Camera? It means you can take a picture right now and transfer it to your computer—instantly. It means you can put the picture you just shot in the newsletter you just designed. It means you never have to process film or scan a photo again. And, because it's a Sony, it means state-of-the-art technology and performance.

Carry a digital studio in the palm of your hand.

The Sony Digital Still Camera has everything you need for remarkable digital imaging—in one small package. Store up to 108 high-quality images without loading a single roll of film. Instantly preview and delete photos using the built-in LCD screen. And get pictures that make you proud—every time.



No down payment. No interest. No payment for six months.

Get something for nothing. When you order any Sony product we'll ship it to you within 24 hours. But you'll pay nothing for six months when you use the Sony Preferred Card.*

So call Sony toll-free today and have a friendly Sony expert tell you all about the Digital Still Camera—and the other Sony products designed to work with it. You'll see first hand how we've extended the Sony experience direct to you.

Check out the latest Sony products, models and pricing at www.sony.com/getdigital

ORDER IT DIRECT FROM SONY

1 - 8 8 8 - 6 3 6 - S O N Y



Digital Color Photo Printer

Produces high-quality photo-realistic prints on VP standard (5.5" x 3.9") paper—direct from the Digital Still Camera.

Model#: DPP-M55 Price: \$499.99



Portable Data Projector

Presentation is everything. The portable, affordable alternative to presenting on overheads, hard copies and notebook screens.

Model#: CPJ-D500

Price: \$1,999.99



20" Multiscan® Display (19" VIS)

Get the big picture. Specifically designed for high-end graphics, desktop publishing and CAD applications.

Model#: GDM-20SE2T

Price: \$1,999.99

Order It Direct from Sony and Get:

- Convenient One-Stop Shopping for all your Sony computer products
- Shipping within 24 hours**
- Special Delivery Options available***
- 100% Satisfaction Guarantee†
- 24-hour, 7-days-a-week technical support for Sony PC systems
- Extended Limited Warranty Options
- Special Financing Options available

Because You Can.

© 1997 Sony Electronics Inc. All rights reserved. Reproduction in whole or in part without written permission is prohibited. Prices, products, special offers and specifications are valid only in the U.S. and are subject to change without notice. Prices do not include applicable sales tax or shipping. Sony, Multiscan, VAIO and the Sony logo are trademarks of Sony. Windows is a registered trademark of Microsoft Corporation. Intel and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. All other trademarks are trademarks of their respective owners. *Pending credit approval, NO FINANCE CHARGES will be incurred if you pay the qualifying purchase amount in full within 6 monthly billing cycles from the charge date. No minimum periodic payment is required during the first 6 billing cycles after the charge date; thereafter the minimum periodic payment will be required. If the promotional amount charged is not paid in full by the payment due date set forth in your 6th monthly billing statement after the date of the charge, FINANCE CHARGES on the outstanding "Average Daily Balance" on the periodic statement will be calculated from the charge date of the purchase until paid in full. Variable APR = 23.23%. APR is variable based on Prime Rate + 14.73%. Minimum APR of 21.98%. Minimum FINANCE CHARGE of \$.50. The Sony Preferred Card is a credit service of Bank One, NA, Dayton, OH. Applies with the purchase of \$300 or more on purchases directly from Sony. **Subject to product availability. ***Delivery in the continental U.S. and 2nd day delivery available for Hawaii and Alaska. †Shipping charges to and from the customer are not refundable.

Gift Code: SD-MW-11/97



Model	G773	P775
CRT Screen Size	17" (16.0" viewable)	17" (16.0" viewable)
Dot Pitch	0.26mm	0.25mm
Maximum Resolution	1,280 x 1,024	1,600 x 1,280
Recommended Resolution	1,024 x 768 @ 87Hz	1,280 x 1,024 @ 88Hz

ClubMac

800-258-2622
Source Code: VWS596



800-339-4239



800-560-6800
2FT3651

PC Connection

800-986-2271



800-248-0800

MacWAREHOUSE

800-255-6227

Introducing SuperClear.™

A monitor with an image so clear we had to trademark it.

SuperClear. It's the latest advancement in screen performance and, not surprisingly, it comes from ViewSonic®, the biggest company in display technology and the leader in the 17" (various viewable) market.

The focus is on clarity.

The .26mm dot pitch G773 17" (16.0" viewable) monitor sets new standards for image clarity. The reason is our SuperClearscreen—ViewSonic's latest engineering breakthrough that combines the exceptional focus found in high contrast conventional CRTs with the bright, vivid colors associated with aperture grille CRT monitors. The result: Absolutely the clearest, brightest images and most vivid colors available on a 17" (various viewable) monitor. At any price. Period.



More specs, more selections, more solutions.

The G773, with 1,024 x 768 resolution at 87Hz, is perfect for general business, home and the internet. If your work requires even higher resolutions, we're also introducing the P775 17" (16.0" viewable) monitor for CAD/CAM, document imaging and prepress applications. This new monitor offers an eye-popping 1,280 x 1,024 resolution at an amazing 88Hz refresh rate.

Keeping an eye on the environment.



And, in keeping with ViewSonic's commitment to environmental concerns, both the G773 and P775 meet strict TCO '95 standards which reduce heat emissions, lower power consumption and mandate the use of recyclable parts. Compliance to TCO certification ensures that our monitors are environmentally and ecologically friendly.

To fully appreciate the clear advantages of the G773 and P775 though, you really need to see them in person.

**For the dealer nearest you, call ViewSonic at (800) 888-8583 ask for agent 5907,
or visit our website at: www.viewsonic.com**



ViewSonic®
See The Difference!®

(909) 869-7976 Fax (909) 869-7958 • Internet: www.viewsonic.com
Specifications subject to change without notice • Copyright © 1997, ViewSonic Corporation, all rights reserved.
Corporate names and trademarks stated herein are the property of their respective companies.

Circle 59 on reader service card

News

SPECIAL REPORT

Apple Eliminates the Top Clone Vendor

BUYS POWER COMPUTING
ASSETS FOR \$100 MILLION

by Stephen Beale

Apple Computer drove a spike through the heart of its Mac OS–licensing program when it announced on September 2 that it will acquire the core assets of Power Computing, the company that built the largest Mac-clone business. Apple will exchange \$100 million in common stock for Power Computing's Mac OS license and 200,000-name mailing list, and also has the right to retain Power Computing executives involved in direct marketing, distribution, and engineering.

Power Computing will continue as a vendor of Windows PCs, but as of December 31, it will no longer sell Mac systems. Power Computing has also canceled a planned initial public stock offering and halted construction on a new \$25 million headquarters near Austin, Texas.

Competition No More The acquisition eliminates Apple's stiffest Mac systems competitor, one that claimed nearly 10 percent of the Mac market in

the second quarter of 1997, according to Dataquest. Apple also stands to benefit from Power Computing's expertise in direct marketing and build-to-order manufacturing; Apple currently sells almost all of its systems through dealers, but plans to step up its own direct-marketing efforts.

First Licensee Power Computing was founded in 1993 by PC-industry veteran Stephen Kahng, who anticipat-

ed that Apple would soon be open to licensing the Mac OS. In September 1994, Power Computing and Radius became the first Mac OS licensees (Radius later sold its Mac systems business to Umax Computer). Power Computing shipped its first Mac system in May 1995, but it wasn't until spring 1996 that the company began shipping systems in significant volumes, eventually growing to \$400 million in

annual sales, according to Apple estimates. Power Computing systems consistently outrated competing Apple systems in *Macworld*, *MacUser*, and *MacWeek* reviews.

Power Computing's troubles began early this year when Apple signaled that it would take a hard-line stance with its licensees, seeking to charge considerably higher licensing fees and impose other conditions. On June 18, Power



Computing and Apple reached a tentative agreement that was included in a document filed with the Securities and Exchange Commission (see "Mac OS 8 Ships with No License Deal," *News*, October 1997). But the deal was never finalized, and after Gil Amelio's July 9 resignation as Apple CEO, de facto chief executive Steve Jobs began an effort to eliminate or seriously curtail the licensing program.

Events crested at the August Macworld Expo in Boston, where Power Computing president Joel Kocher tried unsuccessfully to rally attendees into a mass protest of Apple's licensing policies. In mid-August, Kocher and several other senior Power Computing executives resigned over the licensing flap; Kocher wanted to sue Apple for breach of contract, but the company's board of directors chose to continue the negotiations that led to the acquisition.

Now that it has sold its Mac assets to Apple, Power Computing will continue to sell Mac systems until the end of the year. Public Relations Manager Mike Rosenfelt says the systems will ship with Mac OS 8, and that Power Computing will likely offer discounts as it clears inventory. Ironically, Power Computing's demise may mean even more price pressure on Apple, at least in the short term.

Power Computing says it will provide all technical support for hardware and system software until December 31. Beginning January 1, 1998, Apple will be the primary tech-support contact. If your problem is with the Mac OS, Apple tech support will handle it, but if you need hardware or warranty support, Apple will transfer you to Power Computing's tech-support facility.

Additional reporting by HENRY BORTMAN.

NEWS ANALYSIS

Why Apple Pulled the Plug

SERIES OF APPLE, CLONER MISTAKES LED TO UNPROFITABLE SYSTEM

by Galen Gruman

How quickly the dream died. In December 1994, Apple ended its Macintosh monopoly, giving Power Computing and Radius licenses to make their own Macs. With Windows 95 on the horizon and the success of an Intel/Microsoft duopoly clear, Apple's leaders and the industry saw a chance for the Mac market to gain a new level of competitiveness, flexibility, and innovation.

Almost a year later, Apple and IBM put aside a yearlong rivalry and unveiled a partnership with Motorola to create the Common Hardware Reference Platform (CHRP), which would remove Apple's burden of designing Mac hardware and let the entire industry fund the Mac platform's development.

"We believe that an openly licensed Mac OS running on top of an open, industry-standard RISC hardware platform represents a broadside against the reigning Wintel platform, and will play a key role in our ongoing efforts to greatly increase the presence of Macintosh in all markets," then Apple CEO Michael Spindler said during the November 1994 CHRP introduction. "We believe today's announcement is good news for anyone who believes in innovation, competition, and responding to customer needs."

Second Thoughts Fast-forward to summer 1997: After months of complaints by Apple officials that licensing was hurting the company, Apple and the Mac OS licensees hammered out a new agree-

ment that apparently satisfied Apple's financial concerns and let the licensees stay in business. "My position on the clones was that we had to support them," former Apple CEO Gil Amelio told *MacWeek* of the tentative June agreement.

Then Steve Jobs took over Apple in July and sent strong

successful competitor, Power Computing (see story at left). At press time, it appeared that IBM Microelectronics and Motorola Computer Group were preparing to abandon their Mac businesses. Umax Computer was finalizing a deal with Apple that would largely restrict Umax to designing and selling Mac systems in the Far



KEVIN CANDLAND

Apple withheld support for the CHRP architecture just as the first CHRP systems, such as Motorola's StarMax 6000, were coming to market.

signals that he wanted licensing dead. In a mid-August filing with the Securities and Exchange Commission, Apple said, "The benefits to the company from licensing the Mac OS to third parties may be more than offset by the disadvantages of competing with them. The company is currently in discussions concerning the nature of such licensing arrangements going forward, including whether or not to extend such arrangements."

On September 2, Apple essentially ended the licensing program, buying out its most

East, and selling or making for Apple sub-\$1000 Mac systems, which Apple has been unable to profitably make itself.

Apple says it will honor current licensing deals, which limit licensees to shipping their current systems. Apple also says it will consider licensing companies that target markets Apple does not want. This seems to mean small or nascent overseas markets, such as China and Korea, not proven markets like the United States.

Essentially, the foray into an open Mac market is over.

continues

Kill or Be Killed How did the promise of fall 1994 devolve into the bitter frustrations that plagued Apple and the licensees in spring and summer 1997?

Simply put, Apple found itself with a do-or-die decision: unable to compete with the licensees' faster, cheaper systems, and bleeding large sums of money due to lost sales (particularly in its high-margin systems), Apple decided it must end licensing or go out of business. "If we continued losing money, we would have disappeared," says Apple marketing chief Guerrino De Luca. "Power [Computing] and the others were not in a position to carry this [market] forward if Apple died."

Late Delivery Eroded Profits In the second quarter of 1997, about a fourth of all Mac systems were sold by companies other than Apple. A huge percentage of those were high-end systems from which Apple traditionally made its real profits. And because Apple usually lagged behind the licensees in introducing new technologies, by the time Apple had new systems out, its target customers had already bought elsewhere.

Although CHRP would allow Mac cloners to pay for their own research and development, Apple was unable to deliver the technology until spring 1997, a year later than originally planned. This kept the Mac makers tightly linked to Apple's own designs and forced them to compete for the same customers, since their products could not be significantly different from Apple's.

By this summer, the situation had only gotten worse for Apple: several market researchers predicted that by the end of 1997, Apple would have less than half the market for new Mac sales.

Technology Missteps Despite Apple's crowing about its technology leadership, its actual technology delivery fell

behind that of the licensees. Umax introduced in-line cache first, Power Computing made the first Mac to use the PowerPC 750 and 1:1 backside cache, and Motorola had the first Macs to use the CHRP architecture. Apple instead adopted the new Mach 5 version of the PowerPC 604e and slightly modified its existing systems.

The result was another round of Apple Macs that cost more and ran more slowly than licensees' Macs. Macworld Lab tests this summer showed that Apple's 350MHz Power Mac 9600 was no match for even a 266MHz Motorola StarMax 6000 XL. Apple likely won't match the StarMax 6000's speed until early 1998 when Apple integrates CHRP technology.

Given its technology disadvantage, Apple's refusal to certify competing systems smacked of an effort to hold back competition it knew it could not beat. (Apple has denied such an intent.)

In the early 1990s, Apple systems were routinely trounced in performance by PCs, and that trend began again in the mid-1990s, only to be reversed by Power Computing and the other licensees. Given Apple's inability keep pace with a handful of licensees, it's an open question whether the company will keep pace with the PC industry now that it has eliminated its competition.

A Shrinking Pie Since 1995, Apple's Mac sales had shrunk from about 4.5 million per year to about 1.8 million. The licensees accounted for about 600,000 units in 1997, up from a handful in 1995. Revenues per system also dropped, as Apple was forced to reduce prices to be more competitive.

Power Computing, which accounted for about 10 percent of all Mac sales in 1997's second quarter, went for Apple's jugular earlier this year. The company developed several fast,

inexpensive Macs—based on Apple's own technologies—that outperformed anything from Apple. Power Computing also deemphasized its lower-performance systems, which tilted Apple's sales even more to low-profit (or even money-losing) low-end Macs.

Motorola and Umax, which each held about 5 percent of sales in that period, targeted a broader mix of users.

When Apple inaugurated its licensing program, it did not anticipate a declining Mac market or such stiff competition for its core customers. It did not expect management chaos; expensive, spectacular product failures, such as the Copland OS and eWorld; or such disappointing investments as OpenDoc and the Newton, all of which caused Apple to lay off thousands of people and lose more than \$1.6 billion over 18 months.

No Expansion? Worse, from Apple's viewpoint, the licensees did little or nothing to expand the Mac market. Instead, they focused on existing Apple customers, advertising in Mac publications almost exclusively. The licensees argued that they needed to get a large-enough share of the market to pay for growth. Ironically, it appears that Apple came to a similar conclusion about its own prospects when it decided to end licensing. The licensees also complained that Apple did not market the Mac to new customers and would not cooperate in joint marketing efforts to new customers.

It is clear that neither Apple nor its licensees were working together to significantly expand the overall Mac market. Compare the lack of cooperation there with the PC market, where Intel subsidizes most PCs (something Motorola and IBM do not do for PowerPC systems) and where Microsoft aggressively markets

continues on page 36

graphics

Display Tablet Lets You Draw on LCD Screen

ALSO SUPPORTS WACOM'S NEW PENTTOOLS PLUG-INS

by Cathy Abes

Not content to deliver standard graphics tablets, Wacom (360/750-8882, www.wacom.com) has moved into a new dimension by introducing what it calls a video display tablet. Combining a tablet with an LCD panel in one trim, 5.4-pound package, the \$2699 PL-300 Display Tablet lets you draw and paint on screen via Wacom's pressure-sensitive eraser pen. The PL-300 consists of a 10.4-inch-diagonal



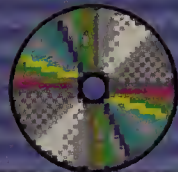
Wacom's PL-300 combines an LCD monitor and graphics tablet.

active matrix LCD monitor mounted on top of a Wacom tablet and provides 800-by-600-pixel resolution in 18-bit color depth (256,000 colors). Its dimensions are 11.4 by 10.0 by 1.5 inches.

The new tablet also supports Wacom's PenTools, the company's first software product. A free set of Adobe Photoshop plug-ins available from Wacom's Web site, PenTools is designed to extend the functions of Photoshop and other graphics programs by fully

continues

Create a CD on your PC with the Philips CD-ReWritable Drive.



Robert Kendall



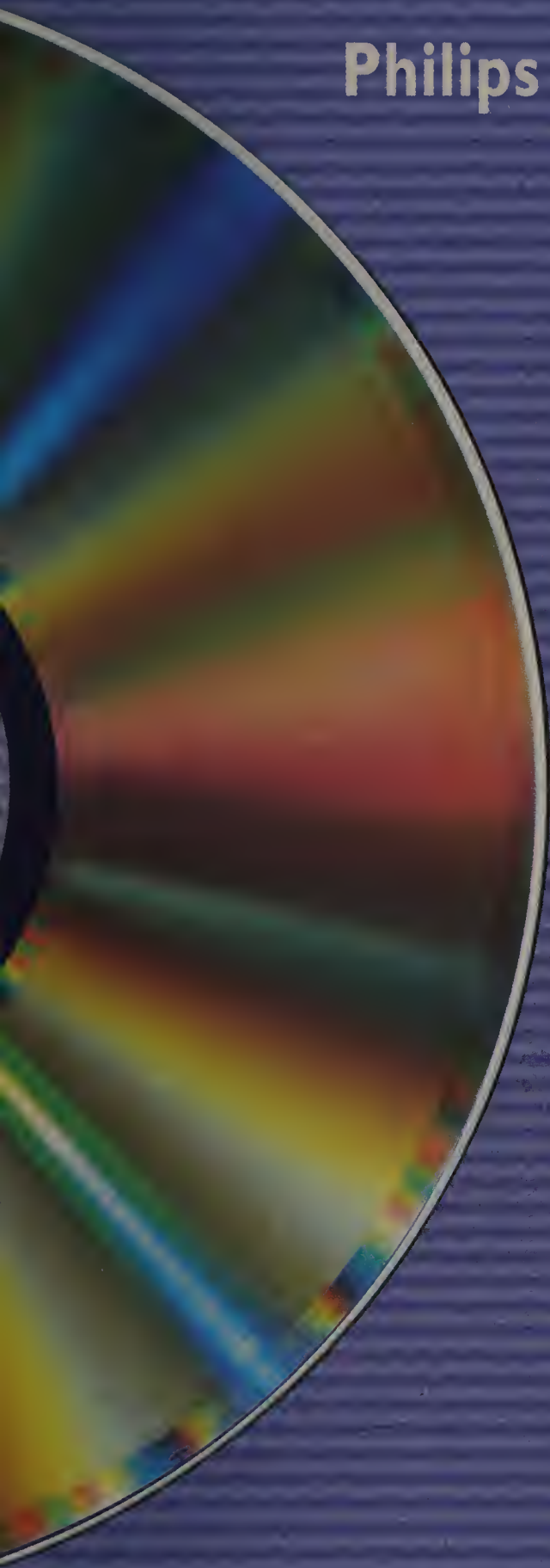
Family Tree

House Plans

Investment Portfolio

E-Mail Files

Alien Sightings



The new Philips **CD-ReWritable Drive** lets you save your world. Store your data, sound, videos, pictures, drawings, files. You name it — and you can save it on a 650 MB Compact Disc. Plus the disc that you create can work on CD-ROM or DVD-ROM drives. The Philips CD-ReWritable Drive is affordable too. Now send CDs of things that matter to you to people who matter to you. For more information: <http://www.philips.com>



PHILIPS

Let's make things better.

Circle 15 on reader service card

exploiting the pressure- and tilt-sensitive capabilities of Wacom's latest pens.

The plug-ins are divided into production (Brush-on Noise, Pen Duster, and Despeckler) and creative tools (Virtual Airbrush, 3D Chisel, and Super Putty).

graphics

3-D Boards at 2-D Prices

ATI, IXMICRO, MATROX

OFFER INEXPENSIVE

GRAPHICS ACCELERATORS

by Howard Baldwin

Even as Macs become faster, video-card manufacturers are pushing the 3-D graphics envelope with new accelerator boards priced under \$1000. ATI Technologies (905/882-2600, www.atitech.com), Matrox Graphics (514/969-6000, www.matrox.com), IXMicro (408/369-8282, www.ixmicro.com), and TechWorks (512/794-8533, www.techworks.com) have all announced graphics boards that support Apple's QuickDraw.

ATI's Nexus ATI Technologies announced the Nexus GA, using its own 3D Rage graphics chip, with support for 1920-by-1080-pixel resolution. The base version includes 8MB of windows RAM (WRAM), a type of memory that offers higher bandwidth than the VRAM used in many other graphics boards. Scheduled to ship in September, the Nexus GA is priced at \$599; an additional 8MB of memory costs \$349.

Three from XMicro IXMicro is offering three boards in its new \$659 IX3D product family, all based on the company's TwinTurbo 128-bit 3-

D graphics controller. The high-end \$659 IX3D Ultimate Rez features 8MB of VRAM and supports up to 1920 by 1080 resolution. The midrange \$349 IX3D Pro Rez comes with 4MB of synchronous graphics RAM (SGRAM) and supports resolutions up to 1600 by 1200 pixels; video out is also available as an upgrade option. SGRAM is less costly than VRAM or WRAM but offers faster graphics acceleration than standard RAM chips.

Finally, the \$249 IX3D Mac Rocket supports MPEG video and QuickTime playback at resolutions up to 1152 by 870 pixels.

New Millennium Matrox Graphics has introduced its Millennium II graphics accelerator, using its own 64-bit MGA-2164W processor, with support for resolutions up to 1920 by 1200 pixels. Supporting QuickDraw 3D and MPEG-1, the Millennium II costs \$269 with 4MB of WRAM and \$369 with 8MB of WRAM.

TechWorks Power The \$249 Power3D from TechWorks features 4MB of RAM and a Voodoo Graphics 3-D



chip from 3Dfx Interactive. Targeting computer-game users, it supports the standard 14-inch monitor resolution of 640 by 480 pixels. The PCI board does not accelerate 2-D graphics, but includes a pass-through cable that allows use with the Mac's on-board accelerated 2-D video circuitry.

online

Stopping Junk E-Mail

WILL LEGISLATION

STEP IN WHERE

TECHNOLOGY FAILS?

by Cameron Crotty

Unsolicited commercial e-mail provokes a hostile response from just about every Net citizen. Users and Internet service providers (ISPs) have found it nearly impossible to construct effective technical defenses, so they are turning to the courts and legislation for more-effective weapons. Meanwhile, direct-marketing companies are battling enthusiastically for your right to receive junk e-mail.

Can't Block It Out Ever since junk e-mail appeared, network administrators and technically savvy users have sought ways to eliminate it. But they are handcuffed by the Internet's primary function of encouraging, rather than preventing, the transmission of information.

As part of its optional Preferred Mail services, America Online will automatically block incoming messages from hundreds of Internet domains that are known sources of junk e-mail. But the list grows daily, and AOL admits that it's technically powerless to eliminate the problem. "As soon as we figure something out, they [junk e-mailers] stay five steps ahead of us," says Jill Lesser, AOL's deputy director of law and public affairs.

ISPs that block e-mail also run the risk of interfering with legitimate traffic. Earlier this year, Netcom officials blocked transmissions from the domain of e-mail provider Hotmail

because a Hotmail user had flooded Netcom's servers with undeliverable junk e-mail messages. Netcom's action prevented its servers from crashing, but it also angered users who could no longer receive e-mail from Hotmail accounts.

Hotmail has since placed limits on the number of addresses to which users can send a single message, but the larger problem remains. Harris Schwartz, information security administrator at Earthlink, a Southern California ISP, says that some ISPs are still blocking messages from Earthlink in response to previous junk e-mail incidents.

Legal Action Frustrated with the ineffective technical weapons available, some ISPs—including CompuServe, America Online, and Earthlink—have turned to the legal system. While the details of the cases vary, these companies have successfully argued that current methods of sending junk e-mail constitute trespass or "use exceeding consent" on their network resources.

As far as Earthlink cocounsel Pete Wellborn is concerned, it's high noon on the Internet, he's wearing the white hat, and it's time to get it on. "We're at a crossroads," he says. "The Internet can either become a glorified infomercial or a useful tool for communication and education. That's going to depend on what's done with spammers."

But other ISPs are reluctant to call in the lawyers due to the high cost of lawsuits and the general lack of legal precedents on cyberspace activities. The precedents that apply to telephone solicitation or postal junk mail are of little use, since these cases generally involve some form of consumer fraud. Some junk e-mail is fraudulent, but most of it is simply annoying. While you can sue someone for being a nuisance, going

continues

These
machines

deliver

superior
deals.



PowerPC™

S High-Upgradeability

7POWER

Mac OS

CacheDoubler
Ready UMAX Exclusive

Macworld
STAR RATING
★★★★★
June 1997

MW
EDITORS' CHOICE

When you purchase a top-quality SuperMac S900, you can double your memory and your speed with our exclusive Double-Up Offer.

Deal #1: Additional 32MB of RAM Free Now*

The S900 family offers a range of models that combine superior engineering and performance. And now you can increase your machine's memory when you buy an S900 between August 1 and November 15, 1997.

Deal #2: \$1000 Cash Rebate in 1998

You get \$1000 back when you purchase an S-series CacheDoubler™ Card† and a 350MHz 604e primary processor card (both available in late 1997).** This deal will make it easy to upgrade your S900 with CacheDoubler, the in-line cache technology that enhances processor performance.

Take advantage of these Double-Up Offer deals on the UMAX S900 today!

UMAX®
Computer Corporation

For more information, Call 1-888-625-UMAX or visit us at <http://www.supermac.com>.

© 1997 All rights reserved. SuperMac is a registered trademark licensed to UMAX Computer Corporation. CacheDoubler is a trademark of UMAX Computer Corporation. Mac and the Mac OS logo are trademarks of Apple Computer, Inc. used under license. PowerPC and the PowerPC logo are registered trademarks of International Business Machines Corporation. Umax Computer Corporation reserves the right to cancel this promotion at any time. Rules and regulations apply. For complete details, please see promotional coupons included in each S900 box, or visit www.supermac.com. *\$4.95 shipping and handling. **\$1,000 Cash Rebate offer is good with end-user purchase of the CacheDoubler upgrade and processor upgrade dated between January 1 and June 30, 1998 † S series CacheDoubler upgrade card available in late 1997.

Circle 100 on reader service card

after a junk e-mailer on this basis "would be a stretch," says Steve Elias, associate publisher of Nolo Press, a California company that publishes books on legal issues.

Whose Law Is It? Congress is now considering several bills that directly address junk e-mail. One, sponsored primarily by Senator Robert Torricelli, D-N.J., would prevent spammers from hijacking e-mail servers and forging e-mail header information to disguise the message's origins or to prevent the recipient from responding. A second bill, sponsored by Senator

happy with any of the proposed legislation, even though AOL helped draft the Torricelli bill.

DMA's View The Direct Marketing Association (DMA) is a trade association for businesses interested in what it terms "database marketing." Not surprisingly, President Bob Wientzen was emphatic in rejecting any legislation, claiming that "everyone will best be served by self-regulation." The DMA currently runs successful telephone- and mail-preference services, through which you can request that your name be removed from the databases of member companies.

This is known as an "opt-out" system, where it's presumed that you want marketing information unless you take action to remove yourself from mailing lists.

Wientzen says the DMA is working on a similar system for e-mail, which he expects to be active this fall. He says the DMA is also talking with the Internet E-Mail Marketing Consortium (IEMMC), which includes some of the best-known junk e-mail distributors.

User Reaction While the computer industry generally opposes junk e-mail legislation, groups of users, such as the Coalition Against Unsolicited Commercial Email (CAUCE), have thrown their weight behind the Smith bill.

CAUCE spokesman Scott Hazen-Muller scoffs at the DMA's proposed opt-out system. "If I spent half an hour, I could probably find ten different remove lists, so what good is one more?"

CAUCE supports "opt-in" marketing methods, by which a consumer must first request information before a business can send anything. Hazen-Muller also questions whether junk e-mailers would even bother to join the DMA. Hazen-Muller also questions whether junk e-mailers would even bother to join the DMA.

NEWS ANALYSIS

"WHY APPLE PULLED THE PLUG"

continued from page 32

Windows (Apple rarely markets the Mac OS).

High Design Costs Apple officials began complaining this spring that the licensees were not paying their "fair share" of Mac development costs. Apple had been charging a license fee of about \$50 per Mac system for the Mac OS and another \$50 to \$75 for use of Apple's hardware designs. (CHRP systems did not require a separate hardware fee.) Apple now believes these fees were too low: "The bet that low licensing fees were sustainable was made based on a growing Mac OS, which turned out not to be true," De Luca says.

After months of negotiations, Apple and the licensees agreed in June to a new Mac OS fee of about \$150 to \$350 per system, depending on speed. (Compare that with about \$50 to \$65 for Windows 95 and \$90 to \$100 for Windows NT.)

The licensees also pay about \$5000 for certification by Apple for every system variant they make, in addition to an annual certification fee, according to sources. Despite Apple's protests to the contrary, the licensees were paying Apple real money.

While unhappy with the new fees, the clone makers accepted the June deal. But a few weeks later, Steve Jobs forced out Amelio and backed out of the agreements.

Even after the June agreements, Apple officials complained that the licensing fees were too low, and some hinted that Apple would need \$500 or more per system to cover Mac OS and Mac hardware development costs.

Why so much? According to industry analysts, Apple's cost structures are extremely

high, given its need to pay for both Mac OS and hardware development. This means the overhead per Mac is more than any licensee would reasonably pay, and is one reason why Apple's Macs are so much costlier than PCs.

The licensing program magnified Apple's historically high costs because Apple could no longer recoup its software development costs through its own Mac sales. By contrast, Microsoft pays for Windows development while Intel pays for most PC motherboard development—and both companies sell about 16 times the volume of products that Apple could hope to. However, IBM and Motorola have paid most of the costs for CHRP, and practically all the costs of the PowerPC CPUs.

Microsoft also makes tremendous revenues from its Office programs, which helps subsidize the company's R&D, much the way Apple's hardware sales have subsidized OS development.

Crown Jewels Although Apple has portrayed the licensing failure as a recent economic decision, the reality is that Apple, or at least parts of it, has never been comfortable with sharing the Mac crown jewels. That, plus the constant sniping by Apple officials on licensing for the last six months, has created a fundamentally negative relationship between Apple and the licensees.

Despite some thaws in the relationship and an occasional positive working arrangement, the basic Apple/licensee partnership was not based on trust or respect, merely on financial opportunity. As the market changed and the conditions for mutual success became more difficult, Apple and the licensees pulled apart rather than pulled together. The result was that when the Mac market's economics went south, licensing became doomed to failure.



Frank Murkowski, R-Alaska, would require that commercial e-mail be specially labeled, presumably making it easier to track or avoid. The most dramatic legislation, proposed by Representative Chris Smith, R-N.J., adds e-mail restrictions to an existing law that makes it illegal to transmit unsolicited commercial faxes.

All of this legislative action, especially the Smith bill, scares the daylights out of ISPs and direct marketers. Few ISPs support the legislation, and those that do give lukewarm lip service—at best—to either the Torricelli or the Murkowski bill. Tony Kelly, director of corporate marketing for PSInet, states that PSInet is opposed to "anything that smacks of censorship on the Internet." Meanwhile, AOL's Lesser says that her company isn't completely

Faster.



Better.

Smarter.

C600x/240 SPECIFICATIONS:

MODEL NAME C600x/240

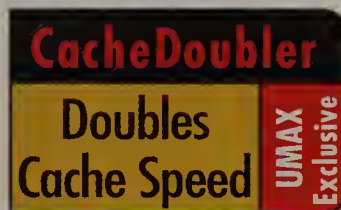
Processor Type	603e/240MHz
RAM	32MB
In-Line L2 Cache	1MB
CD-ROM Speed	12X
Hard Drive	3GB
Processor Bus Speed	80MHz
Video Memory	1MB
33.6 Fax/Modem	Included
External Speakers	Included
Jobra Microphone	Included
10 Base-T Ethernet	Yes

Monitor not included. Features subject to change without notice.

The SuperMac C600x with CacheDoubler technology boosts performance by up to 44%*.

The SuperMac C600x line from UMAX offers everything you're looking for in a superior machine: from sophisticated architecture and innovative technology to a very competitive price and the best performance in its class.

Plus, the C600x comes equipped with CacheDoubler, the new in-line L2 cache card exclusively from UMAX that "conquers the 603e hill," according to *Macworld* (August 1997). All this from UMAX, a company dedicated to the Mac OS system and rated #1 in both service and purchase satisfaction in a June 1997 *Macworld* poll. Get it all with the SuperMac C600x from UMAX.



For more information on where to purchase the C600x, call **1-888-625-UMAX** or visit us at <http://www.supermac.com>

UMAX[®]

Computer Corporation

© 1997 All rights reserved. SuperMac is a registered trademark licensed to UMAX Computer Corporation. CacheDoubler is a trademark of UMAX Computer Corporation. Mac and the Mac OS logo are trademarks of Apple Computer, Inc. used under license. PowerPC and the PowerPC logo are registered trademarks of International Business Machines Corporation.

* Performance statistics based on comparison to C600 without CacheDoubler. The C-series CacheDoubler upgrade card for installed base will be available in September '97.

Circle 99 on reader service card

industry

A New Era for Mac Pubs

IDG AND ZIFF-DAVIS
MERGE MACWORLD,
MACWEEK, MACUSER
by Carol Person

A new era dawned in Macintosh publishing when International Data Group (IDG), parent company of *Macworld*, and Ziff-Davis, publisher of *MacWeek* and *MacUser*, agreed in August to form a joint venture called Mac Publishing that will consolidate the three magazines. The new company will publish *MacWeek* in its current form and *Macworld* as a monthly that incorporates *MacUser*. The changes became effective with this issue of *Macworld*. For several months, *Macworld* will feature a *MacUser* insert in addition to standard *Macworld* content. During that time, the merged staff will work on a redesign that uses content from both magazines. *MacUser* subscribers will automatically receive *Macworld*.

Colin Crawford, formerly president and CEO of Macworld Communications, holds the same post in Mac Publishing. The new venture is led by a board of directors consisting of Crawford and two representatives each from IDG and Ziff-Davis. The company's operations are headquartered in San Francisco.

Crawford named former *MacUser* editor Andrew Gore as editor in chief of *Macworld* to replace Adrian Mello, who resigned after the joint venture was announced.

Crawford also named *Macworld* coexecutive editor

Galen Gruman as editor.

Mello, who had served as editor in chief of *Macworld* since 1992, announced his resignation in a message sent to the magazine's editorial employees:

"I write to let you know that I am resigning as editor in chief. I feel like I've completed my work at *Macworld* and current conditions make it the logical time for me to move on to the next phase in my career.

"Throughout my time at *Macworld* I have always had the deepest respect for the staff and contributors. A few of you who have been here as long as I will testify that it has always been a special place

with exceptional people. I feel fortunate to have worked over the years with an editorial staff that was uniformly committed to quality, integrity, consideration of others, professionalism, and general excellence. I know that along the way, all of you have given many extra hours of effort to ensure that *Macworld* was the best product it could be. Without you, none of my personal success or the company's success would have been possible.

"*Macworld* editorial's designers, administrative staff, editors, online staff, copy editors, lab staff, contributors, art directors, and production editors are the best in the

business and I am proud of the work that we have completed together. *Macworld* has been the standard of excellence among all computer publications precisely because we have always tried to be a great magazine, not just a great computer magazine.

"I especially appreciate the strength of character within our community, which has meant that *Macworld* has always been a place of mutual care and consideration. The greatest gift you could give me is to continue in this same spirit of devotion to quality and concern for others. I thank you all for everything you have done to contribute to my fulfillment and I wish you all the best."

Macs for the Gallery

NEW BOOK CHRONICLES APPLE INDUSTRIAL DESIGNS

Mac fanatics know that Apple has produced the most stylish computers ever sold—most recently its limited-edition 20th-anniversary Mac (see "The 20th Anniversary Macintosh," March 1997). But few realize that some of Apple's most innovative industrial designs

never made it to market.

AppleDesign, a new book by Paul Kunkel with photographs by Rick English, chronicles the evolution of the Apple Industrial Design Group and the award-winning machines it has developed, including many that never got past the prototype stage. Examples include the Paladin, an all-in-

one computer, telephone, fax, and answering machine; and the PenMac (shown above), a handheld, stylus-controlled computer with a CD-ROM drive and infrared data terminal.

Other noteworthy designs include the Nautilus series, sub-notebooks wrapped in leather and brushed or polished metal, and the Domesticated Mac, an update of the discontinued Color Classic. *AppleDesign* is available for \$50 from Graphis (212/532-9387, www.graphis.com).—ANDREA DUDROW



RICK ENGLISH

systems

Be Bops On with New Software

RUNS BEOS ON INTEL AS
NEW APPS ARE UNVEILED
by Howard Baldwin

As Apple celebrates strong sales of Mac OS 8, Be (650/462-4100, www.be.com), developer of one of the other operating systems for PowerPC CPUs, continues to bop along with new releases of its software.

In July, the company shipped its BeOS Preview Release for PowerPC, followed by an update that adds AppleTalk printing and improves video drivers and IDE support. Hedging its processor bets, Be also demonstrated its BeOS running on a dual-Pentium II PC at an August developer conference

continues

A New Low For High-Resolution Color Scanning!

New Lower Price
\$299!

ScanMaker E6 (standard model)
Suggested Street Price.
Was \$359

- 30-bit color • Single-Pass
- 600 x 1200 dpi optical resolution
- 9600 dpi enhanced



MICROTEK
ScanMaker E6

The 30-bit single-pass MICROTEK ScanMaker® E6 color flatbed scanner is an incredibly fast scanner that doesn't sacrifice image quality for speed. In fact, in a recent test of 17 brand name scanners by PC Magazine (3/4/97), the ScanMaker E6 tied for image quality with two of its more expensive competitors. With the MICROTEK ScanMaker E6, you'll also get MICROTEK's easy-to-use, award-winning ScanWizard™ which lets you enhance images even as you scan them!

The ScanMaker E6 Pro model with the full-version of Adobe Photoshop and Xerox TextBridge Pro OCR software (suggested street price \$559) is also available. Need more information? Call 1-800-654-4160 or visit our Web site at www.microtekusa.com.

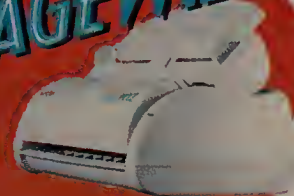


INCLUDES: MICROTEK's award-winning ScanWizard™ scanner controller
• MicroFrontier's Color It! image editing and paint software (Macintosh models)
• Caere's OmniPage Limited Edition OCR software for scanning and converting pages of text into editable files



Also from
MICROTEK:

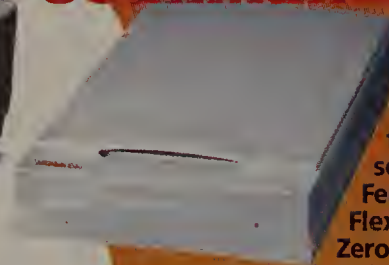
Color
PAGEWIZ



24-bit color
sheetfed
scanner.

Captures photos or documents in seconds. Small, lightweight, and portable. Includes image editing, OCR and document management software. Only \$159 (suggested street price)!

MICROTEK
ScanMaker V300



ALL NEW
24-bit color
flatbed
scanner.

Features New
FlexScan™ Lid,
Zero Reflection
Design Technology

and Parallel Port connector for quick and easy set up. Includes image editing, OCR and document management software for Windows models. Only \$149 (suggested street price)!

MICROTEK
ScanMaker E3



HOME PC
Editors' Choice!

Quite possibly the best-selling 24-bit color flatbed scanner on the market. Winner of numerous awards and accolades. Features a large scan area, image editing and OCR software, ScanWizard, and Zero Reflection Design Technology. Only \$199 (suggested street price)!

MICROTEK

Better Images Through Innovation.

www.microtekusa.com.

Media WATCH

BY CATHY ABES

Pushing Photoshop's Buttons

Extensis (503/274-2020, www.extensis.com) is adding two new tools and several enhancements to its Photoshop plug-in collection, PhotoTools 2.0, due by the end of October at a street price of \$130. PhotoButton lets Web and multimedia designers create multiple buttons with a variety of effects, including bevels, convex and concave centers, framed edges, and adjustable lighting. You can build vertical or horizontal bars of up to 24 buttons, as well as a matrix of buttons with up to 64 entries. PhotoCastShadow lets you apply drop shadows and perspective shadows; you can also generate a shadow without the selection or invert a shadow to simulate embossing and other effects.

Enhanced tools include PhotoText, which now lets you save text blocks and define style sheets; and PhotoGlow, PhotoEmboss, and PhotoBevel, which have added real-time previews, multiple undos, and background processing.

Creator 2 Goes Mainstream

Aiming to fill what it sees as a void left by page-layout giant QuarkXPress, Multi-Ad Services (309/692-1530, www.multi-ad.com) has revamped Multi-Ad Creator and renamed it Creator 2. Although the new version is still geared to designers of ads and promotional materials, the company is betting that its multiple-page support, document-customization features, and full scriptability will attract many Quark users.

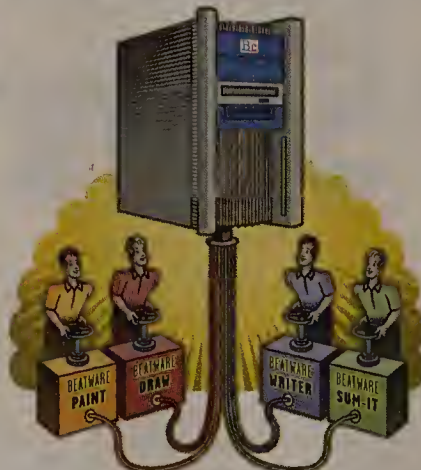
Creator 2 lets you specify two-page spreads, multiple master pages, and individually sized pages within a document. Its Style Models let you apply multiple style settings within the same style sheet. The new Containment tool lets you individually position and edit elements within containers without affecting anything else on the page. In addition to PostScript drawing tools, the program provides trapping, color separations, and ColorSync 2 support. Due in late September, the program will retail for \$995, with an expected street price of \$649.

Graphics Applications Get ICE'd

Version 4 of Integrated Computing Engines' (888/423-8447, www.iced.com) \$8999 ICEfx video-effects accelerator, due in September, adds 14 new effects to its repertoire while reducing its hardware needs to a single PCI slot. The board also extends application support to include the Ultimatte blue-screen compositing tool and Illuminaire video-compositing software from Discreet Logic. Also available as a separate software option is the \$995 ICE'd Cyclonist, an accelerated version of DigiEffects' organic particle-animation plug-in. Newly optimized DigiEffects filters include Videolook, Fogbank, Starfield, Chaotic Noise, and Chaotic Rainbow.

held on the eve of Macworld Expo in Boston.

The company promises to release R2 (for "second public release") versions of the OS for both platforms in January, putting the BeOS on comput-



ers that run Mac OS, Windows 95, and Windows NT. The R2 versions will feature numerous multimedia enhancements, including support for MPEG, QuickTime, JPEG, 3-D graphics, and live video, according to spokesman Mark Gonzales.

Be's Intel port produced a surprising result for the company—Be engineers claim that they found the PC platform to be faster and more stable than Apple's Power Mac designs. These engineers say they expect Intel hardware to become the BeOS platform of choice.

Be Applications Meanwhile, several small developers have introduced software for the fledgling market. BeatWare (650/322-7290, www.beatware.com) is shipping two suites: Be Basics, a \$69 package that includes word processing and spreadsheet software, and Be Studio, a \$99 paint and draw combo. The paint program takes advantage of the multithreaded capabilities of the BeOS, letting you open multiple copies of the same image and apply different filters to each.

Both suites include a free upgrade to version 2.0, which is planned for next spring. BeatWare also offers a BeOS programming tool called

AppSketcher that works in conjunction with Metrowerks CodeWarrior DR3.

Be lists some 200 packages for its Preview Release or Advanced Access Preview Release (AAPR), an early version of the OS that shipped only to developers. These include development tools, spreadsheets and other business productivity applications, and even an Amiga emulator.

Applications written for previous versions of the BeOS, including AAPR, are not compatible with the Preview Release. However, Gonzales says, most of the older applications have been ported to the updated version.

multimedia

Completing the QTVR Panorama

SOFTWARE LETS YOU
CREATE OBJECT MOVIES

by Stephen Beale

The first generation of mass-market QuickTime VR (QTVR) authoring programs—PictureWorks' Spin Panorama, Panimation's Nodester, and Live Picture's PhotoVista—let you create virtual-reality panoramas (see *Reviews*, in this issue).

Now, two of these vendors, PictureWorks Technology (510/855-2001, www.pictureworks.com) and Panimation (407/599-9697, www.panimation.com), have completed the QTVR picture by introducing software that lets you create QTVR object movies. Apple Computer (408/996-1010, www.apple.com), which invented QuickTime

continues

I am...

Discover Creator2, drawing and page layout software made expressly for designers. This streamlined software is tailored to the way you work, providing the freedom to tinker, rearrange, and adjust your designs to achieve the perfect look. There's no learning curve, no software adjustment period, no wading through features designers never use. Just your creativity and Creator2's powerful drawing, layout, image-handling, trapping, and typography controls.

therefore I create.

With the ability to include multiple page sizes in a document, view and edit separated graphics within the application, and use both text and image style sheets, Creator2 is ideal for ads, brochures, annual reports, packaging, letterhead, and other graphic arts collaterals. And, Creator2 is customizable so you can add capabilities specific to your workflow.

Creator2 lets you do what you do best. **Design.**

To learn more about Creator2 call 1-800-245-9278
or visit <http://creator2.multi-ad.com>

M U L T I - A D
CREATOR2
The Next Generation Design Tool



Sneak PEEK

Quicken Expedites Finance Management

BY WENDY SHARP

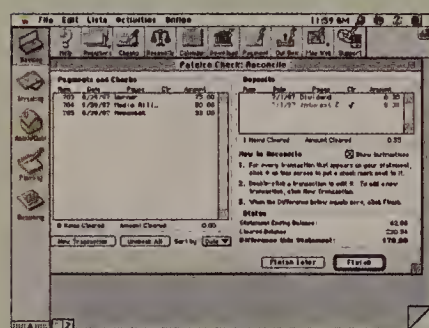
Quicken's annual upgrades, Quicken Deluxe 98 and Quicken Basic 98, are on the way from Intuit (650/944-6000, www.intuit.com), and users have much to be excited about. A long list of new features and seemingly minor enhancements adds up to some major improvements.

Crowd Pleasers Minor tweaks, such as longer category and account names, are immediately satisfying. Other crowd pleasers include Smart Reconcile, which saves past reconcile statements—making it easier to fix mistakes—and direct report editing, which lets you make content, layout, and font changes from within a report. You can click on the Register Shortcuts button from within the register to schedule transactions and instantly create relevant reports. Other improvements include automatic file backups, a new register account bar, and an improved online-banking window.

Deluxe Features Quicken Deluxe users will get QuickEntry, a tiny (less than 800K) application that lets you quickly record daily transactions. It's essentially an empty register list: any data you type in is added to your account file. A tip from Intuit: cleaning out your QuickFill list makes QuickEntry open faster.

Deluxe also lets Internet users link to Web sites offering mortgage, tax, investment, insurance, and financial-planning information. For example, a click on the insurance task takes you to

InsureMarket, which quotes comparisons from major insurance companies. Of course, you can access the same sites without Quicken, so while potentially handy, it's not worth upgrading for. Other Deluxe features include a tax-deduction finder, a mutual-fund finder, and a password-protectable emergency-records



The improved reconcile window gives clear directions for those new to reconciliations.

keeper, which helps you collect and store personal information, such as bank-account numbers and the location of your will.

Both versions are memory-hungry. System 7 users will need 8MB of RAM to run Basic, while Deluxe will take 12MB. Mac OS 8 users need a hefty 12MB for Basic, 16MB for Deluxe.

Due in October, Quicken Deluxe 98 will retail for \$59.95; current owners will get a \$20 rebate. Quicken Basic 98 will cost \$39.95, with a \$10 upgrade rebate. Most users should find Quicken Basic's interface enhancements appealing. Though Deluxe's more advanced features are less useful, QuickEntry alone may be worth the extra \$10 for those who upgrade. New users, on the other hand, should save the \$20 and go the Basic route.

VR, is also joining the fray with a forthcoming QTVR authoring suite.

A QTVR panorama places you in the middle of a virtual environment. In contrast, a QTVR object movie lets you view an object from multiple angles, as if you were holding it in your hand. You can save the objects as stand-alone movies or, with the proper software, embed them within a QTVR panorama.

Common Features To produce an object movie, you first photograph the object from



different sides, generally placing it on a turntable or gantry for precise positioning. PictureWorks' Spin PhotoObject and Panimation's Widgetizer then combine these multiple images into a single QTVR object. Both programs include features that let you adjust the alignment of individual frames within the object movie. You can also use the programs' respective overlay features to see preceding frames.

In addition to producing QTVR object movies, Spin PhotoObject can save objects for continuous playback as animated GIF or QuickTime MOV files. Widgetizer is limited to saving QTVR files.

Spin PhotoObject was scheduled to ship September 1 for \$150, with a \$100 introductory price in effect until September 30. Widgetizer is scheduled to ship in early fall at a price to be determined; Panimation executive vice president Walter Neals says it will cost

no more than \$170.

Apple's Entry Neither Spin PhotoObject nor Widgetizer can embed an object movie in a panorama. For that, you'll need Apple's forthcoming QuickTime VR Authoring Studio, which will provide all the components needed to create multinode QTVR panoramas that include object movies along with links to other panoramas.

Apple already offers a QuickTime VR Authoring Tools Suite that can create multinode QTVR panoramas (see aforementioned review). However, it uses a cumbersome command-line interface more oriented toward developers than ordinary users. The forthcoming QTVR studio will feature a more intuitive Macintosh interface.

Two modules in the studio, Panorama Stitcher and Panorama Maker, function much like Panimation's Nodester and PictureWorks' Spin Panorama. Panorama Stitcher lets you combine multiple images into a seamless panorama, while Panorama Maker converts panoramas—either photographs or synthetic 3-D imagery—into QTVR movies.

The Object Maker module, similar to Widgetizer and Spin PhotoObject, creates object movies from a series of still images. Scene Maker lets you combine multiple QTVR panoramas and object movies into full-fledged multinode QTVR files.

The software also includes a project manager that lets you track media elements to be used in the panoramas. Apple plans to ship the software in the fourth quarter but has not announced pricing. Panimation is considering a similar product for early-1998 release that will combine Nodester and Widgetizer with multinode QTVR authoring software. Neals says that the software is likely to sell for \$400 to \$500.

multimedia

New Cameras Make Movies

CANON AND HITACHI
COMBINE STILL IMAGING
AND DIGITAL VIDEO

by Stephen Beale

Digital video and digital photography could soon be on a collision course, thanks to recently announced camcorders from Canon (516/328-5904, www.usa.canon.com) and Hitachi (770/279-5600, www.hitachi.com) that double as digital cameras.

Digital Camcorder Canon's \$2500 Optura, scheduled to ship in October, stores images at 720-by-480-pixel resolution in one of three modes: a still-photo mode, a normal movie mode for playback on standard

TV sets, and a progressive-scan movie mode that captures a full 30 frames per second of noninterlaced video. The latter mode, in addition to producing digital-video clips, can be used in the same manner as a high-speed motor drive to capture a rapid succession of still images.

The camera stores video on standard mini-DV tape cassettes, available in 30- and 60-minute capacities for about \$7 and \$11, respectively. It also includes an IEEE 1394 FireWire interface for fast file transfer to your Mac. The base package does not include a flash, but the camera works with any Canon EOS Speedlite flash.

The Optura has several features designed to enhance image quality, including an optical stabilization system that automatically shifts the image to compensate for shaking, and a FlexiZone autofocus function that lets you choose the area of the

image on which to focus. The camera also offers 14× optical zoom and 35× digital zoom; the latter feature uses interpolation to boost the apparent size of the image. A \$200 light-box option converts the camera into a slide scanner.



Canon's Optura uses a FireWire interface for fast data transfer.

MPEG Camera Hitachi, which introduced a Windows version of its \$2400 MP-EG1A MPEG camera in May, recently announced a \$300 Mac interface kit consisting of a SCSI adapter, file-transfer software, and a special release of Apple's QuickTime MPEG extension. True to its name,

the camera stores video directly in the MPEG format using a built-in MPEG-1 encoder/decoder chip. It features a removable 260MB PC Card hard drive capable of storing 20 minutes of MPEG video, 3000 still JPEG images, 1000 still images with voice annotations, or 4 hours of MPEG audio. You can transfer images using the SCSI adapter or, if you have a PowerBook, through the PC Card. An AV port lets you display images on a TV set. Maximum resolution is 704 by 480 pixels. The camera offers a 3× optical zoom and a 2× digital zoom.

The MP-EG1A is powered by two rechargeable lithium-ion batteries, good for 40 minutes of operation between charges. A charger and an AC adapter are included. Other features include a wireless remote, a built-in microphone and speaker, and a 1.8-inch color LCD for image preview and file management.

Tatung CHRP Mac Keeps Pace

The second company to announce a CHRP system, Tatung Information Systems of Taiwan, has managed to deliver performance that keeps pace with similar systems. Despite the TPC-6600's faster system bus (75MHz, versus 50MHz) and faster CPU, the TPC-6600 running at 262.5MHz is only marginally faster than a 250MHz Umax system (like most current Mac systems) uses a fast video card. However, the TPC-6600 nearly matches Apple's new 300MHz Power Mac 8600/300, which has slow video circuitry and a slower (50MHz) system bus. For more on the TPC-6600, see "Tatung Shows First 75MHz System Bus," *News*, August 1997.



Best overall performance. Longer bars are better. Bold indicates best result in a specific test. ▶ New system. An Apple Power Macintosh 7100/B0 has a SpeedMark score of 1.0.

SpeedMark		CPU	FPU	Disk	Video	Star Rating
Motorola StarMax Pro 6000/300 prototype*	5.6	6.2	5.4	3.9	9.8	not shipping
Power Computing PowerTower Pro G3/275 prototype*	5.1	5.9	5.2	2.8	9.4	not shipping
Apple Power Macintosh 9600/350 prototype**	4.3	4.7	4.7	2.6	7.7	not shipping
Apple Power Macintosh 9600/300 prototype**	4.0	4.3	4.3	2.5	7.1	not shipping
Umax SuperMac S910/250**	3.8	3.9	3.7	3.1	7.2	not shipping
Power Computing PowerTower Pro 250***	3.6	3.9	3.8	2.5	7.6	★★★/6.2
Apple Power Macintosh 8600/300 prototype**	3.6	4.1	4.1	2.3	3.9	not shipping
▶ Tatung TPC-6600 prototype (262.5MHz)**	3.5	3.9	3.9	2.4	4.4	not shipping
Umax SuperMac S900/250***	3.5	3.8	3.7	2.5	7.3	★★★/6.3
Power Computing PowerTower Pro 225***	3.4	3.6	3.4	2.3	7.2	★★★/6.4
Apple Power Macintosh 9600/233***	3.3	3.5	3.4	2.3	6.9	★★★/6.6

*Uses PowerPC 750. **Uses new Mach 5 PowerPC 604e. ***Uses previous PowerPC 604e.

Behind Our Tests

For detailed information on our systems benchmarks, see *Mac SuperGuide*, September 1997.—Macworld Lab testing supervised by Mark Hurlow

Your MacTM friends might tease you but for \$2500, you'll get over it.

Pocket huge savings with an alternative in notebook computers.

Let's get this out of the way right away—WinBook is a PC compatible notebook computer and it doesn't run the Mac OS[®]. The Macintosh[®] and the Mac OS[®] are great products but there is an alternative for notebook users.

Let's talk about mobile computing and what a notebook is mostly used for—business. And business applications like Microsoft Word[®], Excel[®], and communications software that allows you to fax and connect to the internet look and feel the same in Windows '95 as they do in the Mac OS.

That's a fact, and so is the incredible difference in price between a WinBook XL and a comparably equipped Apple[®] PowerBook[®] 3400. The PowerBook[®] costs \$2500 more and it has half the RAM and video memory, no pointing stick and a lesser battery.

So before you buy a notebook, take a look at a "Critically Proven" WinBook. We've won over 120 awards from major computer publications and experts for our innovative and inexpensive notebook line that starts at only \$1999. For a complete information kit call 800-468-2902.



Apple[®] Macintosh[®] PowerBook[®] 3400 240 MHz PowerPC[™] 603e Processor

- 12.1" Active Matrix Screen
- 16 MB RAM
- 3 GB Hard Drive
- 3 Hour Battery
- 256K L2 Cache
- 3.5" Floppy Drive
- 12x CD-ROM
- Touchpad
- 16-Bit Stereo Audio
- One Type II or one Type III PCMCIA Slot
- 1 MB VRAM
- 33.6Kbps Modem
- One-year extendible warranty
- MacOS[®] installed

COMPARE:

\$5999!

Price for above configuration at Mac Zone,
8/25/97, not available from WinBook Computer
Corp.

WinBook XL- 233 MHz Intel[®] Pentium[®] Processor with MMX[®] Technology, Running at 1.8V

- 12.1" SVGA Active Matrix Screen (add \$400 for 13.3" display)
- 32 MB EDO DRAM
- 3 GB removable Hard Drive
- 45Wh Lithium Ion Smart Battery
- 256K Syncburst L2 Cache
- 3.5" Floppy Drive and 20x CD-ROM both built-in
- Integrated dual-button pointing stick and touchpad, both active simultaneously
- 16-Bit Stereo Audio
- Two Type II or one Type III PCMCIA Slot, CardBus and ZoomVideo supported
- PCI Graphics Accelerator w/2 MB DRAM
- Parallel, Serial, PS/2, VGA, 2-way Infrared port, TV out, USB (2)
- One-year extendible warranty
- Microsoft Windows[®] 95 installed

\$3599

Add \$400 for 13.3" XGA (1024 x 768)
TFT Active Matrix Color Display
Add \$159 for an internal 56k Fax/Data Modem

www.winbook.com. 800-468-2902

WinBook[®]

Critically Proven.

Call Now: 800-468-2902
Mon-Fri 8am-9pm EST Sat 9am-4pm EST

U.S. sales only. 30-day unconditional money-back guarantee from date of purchase.



©1997 WinBook Computer Corporation. All rights reserved. WinBook is a registered trademark of Micro Electronics, Inc. The Intel Inside logo and Pentium are registered trademarks and MMX is a trademark of the Intel Corporation. Apple, Macintosh, Mac and MacOS are trademarks of Apple Computer, Inc. PowerPC[™] is a trademark of International Business Machines. All other trademarks and registered trademarks are property of their respective corporations. All prices and specifications are subject to change without notice or obligation. Prices do not include shipping.



"With Retrospect 4, Dantz takes its product to new heights. We know of no other backup and restore application on any platform as speedy, functional and easy to use."

MacWEEK, July 16, 1997

"Those considering a backup solution should definitely consider Retrospect 4.0. Current users should absolutely upgrade—especially with the low upgrade price."

InfoWorld, July 14, 1997

RETROSPECT TURNS THE BIG 4.0!



*Retrospect 4.0
backs up data at
twice the speed.*

Everybody's favorite backup software has hit 4.0. And a true milestone it is!

Retrospect 4.0 is seasoned with enough real-life experience to perform like no other backup program.

Compared to version 3.0, it does more, it looks better, and it has big time performance improvements.

If you're a network administrator, new TCP/IP support means you'll back up twice as many computers in the same amount of time.

And we're talking huge volumes—up to a



Retrospect is totally compatible with the new Mac OS 8, so upgrading won't put you behind the eight-ball.

full terabyte—and millions of files. Installation is a breeze—4.0 can update every client on the net and you won't have to change a single script.

Everyone wants a smooth upgrade to Mac OS 8 and Retrospect is extraordinarily compatible with both Systems 7

and 8. Public service announcement:

Make sure to back up before you

make the move!

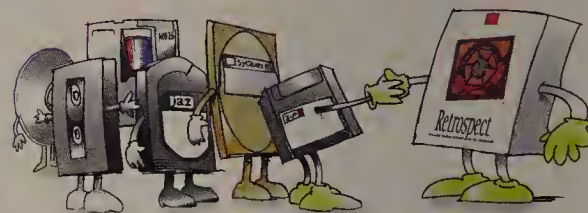
Speaking of smooth, now you can get backup status by email or pager. You, too, can have your beeper

go off at a dinner party just like the doctor next to you.

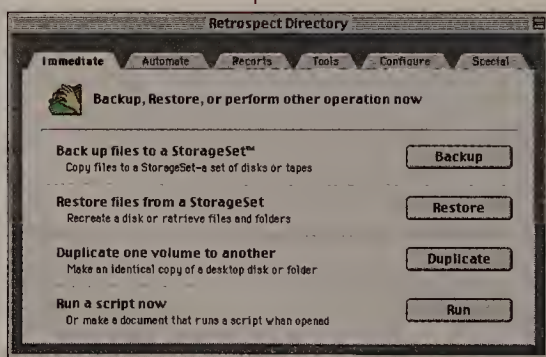
There's more. Now you can save a browser to a file, or export a catalog to a database. We've included a whole slew of custom drivers to assure compatibility with almost any drive you could name from tape to MO to CD-R. There's even an automatic reminder to clean the tape heads.



Celebrate Retrospect's big 4.0 with us—call 1-800-982-9981 and treat yourself to a high-speed upgrade.



For Zip, Jaz, SyQuest, MO, or any removable drive, new 4.0 is the perfect team player.



Retrospect's interface received recognition from Apple for Human Interface Design Excellence.

Our exclusive SnapShot™ technology now lets you recover any previous backup session, not just the latest, so you can restore your hard disk exactly the way it was at any point in time.



800-982-9981
UPGRADE HOTLINE



*To go forward,
you must backup.**

© 1997 Retrospect is a registered trademark of Dantz Development Corporation. 4 Orinda Way, Building C, Orinda CA 94563. Phone: 510.253.3000. Fax: 510.253.9099. www.dantz.com Email: info@dantz.com (automated response) or upgrades@dantz.com. All other trademarks are property of their respective holders.

New Products

THE LATEST MACINTOSH RELEASES

Edited by Keith Mitchell

COMMUNICATIONS

E-mail, Anyone?

QuickMail users, take note: CE Software (515/221-1801, www.cesoft.com) has released QuickMail Pro Server, an Internet server that replaces the company's proprietary LAN-based server. The server supports POP and IMAP protocols and includes mailing-list capabilities. Pricing ranges from \$100 for 5 users to \$500 for 100 users. Site licenses are also available.

DISPLAY

Enjoy the View

Is a monitor in your future? Here are some new ones to check out.

- Panasonic's (201/348-7000, www.panasonic.com) \$599 S70, 17-inch monitor has a 0.27mm dot pitch, a 16-inch viewable area, and resolution of up to 1280 by 1024 pixels. The \$299 E50 is a 15-inch monitor with a 0.27mm dot pitch, a 13.7-inch viewable area, and up to 1024-by-768-pixel resolution.

- The SuperView Pro 260 is a \$779, 17-inch monitor from TeleVideo (408/954-8333, www.televideoinc.com). It has a 0.25mm dot pitch, a 16-inch viewable area, and a maximum resolution of 1600 by 1200 pixels.

GRAPHICS

Digital Photos to Go

Weighing in at 5.6 ounces, the \$399 DX-5 digital camera from Fuji (914/789-8100, www.fujifilm.com) includes an automatic flash, a 2MB SmartMedia card that can store up to 30 images, and image-editing software. The camera takes 24-bit

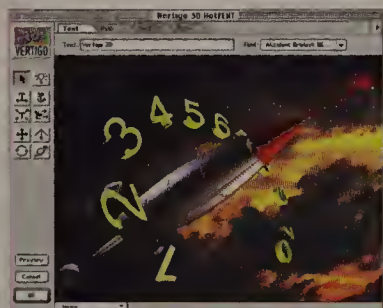
color images at maximum resolution of 640 by 480 pixels.

Scanning the Horizon

High-resolution scanning comes in a flatbed package with the Quato X-finity from Spark (847/998-6640, www.quato.com). The \$3595 scanner delivers an optical resolution of 1200 by 2400 dpi at 42 bits per pixel.

Fear of Sights

Take your Adobe Photoshop text to new heights with Vertigo 3D HotText from Vertigo Technology (604/684-2113, www.vertigo3d.com). The \$199 Photoshop plug-in lets you convert 2-D text to 3-D, align it to customized 3-D paths, and apply lighting and surface effects. You can create your own paths or use the 20



Vertigo 3D HotText

editable ones that come with the product. Using the plug-in's graphics tools, you can reposition, tilt, rotate, and change the thickness of selected text. The program also works with bitmapped images imported into Adobe Illustrator.

MULTIMEDIA

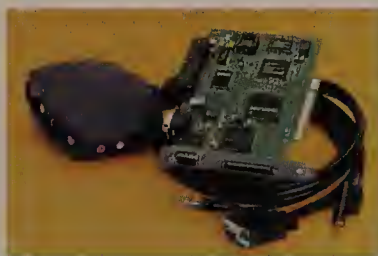
Crank It Up

Is the neighborhood getting too quiet? Panasonic's (201/348-7000, www.panasonic.com) \$99 EAB MPC250 external speaker system lets you boom the bass with a 10-

watt subwoofer and two 10-watt, two-way speakers.

Stung by Multimedia

Iomega (801/778-1000, www.iomega.com) hopes consumers will swarm to its new Buz multimedia producer. The device is a combination PCI video-capture card; Ultra SCSI controller; and software suite that lets



Buz Box and Ultra SCSI

you store movies, photos, and music from camcorders, DVD-ROMs, digital cameras, VCRs, and laser discs on your computer. An external Buz box plugs into the video card and includes in and out connections for S-Video, composite video, and stereo audio. Buz comes with a suite of software for manipulating audio, video, and pictures. The system is scheduled to ship in the fourth quarter of 1997 for an estimated \$200.

Hot, Hot, Hot

For really burning video, Artbeats Software (541/863-4429, www.artbeats.com) has released ReelFire and ReelExplosions video special-effects CD-ROMs. ReelFire includes effects such as fireworks, smoke, torches, and flames. ReelExplosions includes ground explosions, zero-gravity explosions, and fireballs. The sequences are stored as 720-by-486-pixel QuickTime movies and can be used with any video-editing software that imports QuickTime files. Each costs \$499.

ONLINE

Your World on the Web

Now you can show your surroundings to the rest of the world with SiteCam 1.0 from Rearden Technology (415/550-7573, www.rearden.com), maker of the popular shareware

MacWebCam. The \$129 program streams images over the Internet from a video camera tethered to your computer. The software supports still images and live video, automated image archiving, and time stamping, and can be used with any QuickTime-compliant video source. The video frame rate scales to the available bandwidth for optimal streaming. Current users of MacWebCam can upgrade for \$75.

Object-Oriented Authoring


Getting interactivity, sound, and animation on your Web site usually requires scripting. But mBed Interactor 1.0 from mBed Software (415/778-0930, www.mbed.com) lets you create interactive, media-rich Web sites using building blocks called mBed Players. You can create interactive buttons, slider controls, styled text, and animation effects. The \$99 program can also play back RealAudio streams synchronized to animation on your Web site.

SYSTEMS

Keep Macs in Schools

Don't let your school replace its Macs with PCs. Tell it about Orange Micro's (714/779-2772, www.orangemicro.com) OrangePC 530 Windows-compatibility card, designed for the education-only Power Macintosh 5400 and 5500. The 7-inch card includes an upgradable 166MHz Pentium processor; 8MB of RAM (expandable to 128MB); and serial, parallel, game, and audio-in and -out ports. A base configuration costs \$861. **m**

VENDORS: TO HAVE YOUR PRODUCTS CONSIDERED FOR PUBLICATION IN *NEW PRODUCTS*, SEND A PRESS RELEASE WITH PRODUCT DESCRIPTION, PRICE, AVAILABILITY, AND CONTACT INFORMATION FOR READERS, PLUS OPTIONAL PHOTO OR SCREEN SHOT, TO NEW PRODUCTS EDITOR, *MACWORLD*, 501 SECOND ST., SAN FRANCISCO, CA 94107; *NEW_PRODUCTS@MACWORLD.COM*.



AT 360 DPI
YOU SEE A LADY IN HER
BATHING SUIT.

AT 720 DPI
YOU SEE HER BATHING
SUIT IS WET.

YOU'VE GOT TO SEE IT IN

EPSON

COLOR.

AT 1440 DPI
YOU SEE HER BATHING
SUIT IS PAINTED ON.



An amazing paint job makes you think it's a bathing suit. These astonishing new printers let you know it's not. 1440 x 720 dpi. Photo Quality color. Laser-sharp black text. All from our exclusive Micro Piezo™ Technology—for a smaller, more consistent dot. You'll get print quality that's already won 33 major awards, including PC Computing's 5 Star Rating. In standard format or wide format. PC/Mac compatibility. Optional internal Ethernet. Up to 8 ppm black/7 ppm color on the Epson Stylus® Color 800. Plus a 2-year warranty. Call 1-800-GO-EPSON (ask for operator 3010) or visit us at www.epson.com for more details. For every detail, look at the output.

INTRODUCING THE WORLD'S FIRST 1440 DPI COLOR INK JET PRINTERS.



EPSON Stylus Color 800 about \$449. High-performance business printer

EPSON Stylus Color 1520 about \$799. The versatile wide format printer.

Reviews

PowerBook 2400c

SUBNOTEBOOK IS FAST AND
CONVENIENT BUT NEEDS
BETTER KEYBOARD

AS A LONGTIME POWERBOOK Duo user, I was eager to try out the PowerBook 2400c, Apple's 4.3-pound entry in the subnotebook category. Like the Duos, the 2400c stays trim by sacrificing an internal floppy drive, though it does sport a compact external floppy drive that can be left at the office when you're traveling. It also lacks an internal CD-ROM drive, a standard feature on the much larger and heavier PowerBook 1400 and 3400c models.

The main circuitry in the 2400c—a 180MHz 603ev PowerPC processor with 256K cache—proves to be nearly as speedy as the 180MHz version of the 3400c (see “PowerBook 2400c—Solid Subnotebook Performance”). Unlike with the 3400c, the 2400c's processor resides on a daughterboard, allowing for future CPU upgrades. Newer Technology (316/943-0222, www.newertech.com) plans upgrades using the new PowerPC 750 CPU running at 233MHz or 250MHz, depending on how much heat the CPU generates—the 2400c also lacks the 3400c's built-in fan.

The only other provision for internal expansion comes in the form of a slot for an industry-standard JEDEC memory card. Apple says the most RAM you can add is 32MB, bringing the total RAM to



ROBERT PERRY

48MB with the 16MB soldered on the motherboard. The actual limit is 64MB (for a total of 80MB), but because of a design mix-up, the 64MB card must be specially made for the 2400c (it must have two swapped wires, compared with a true JEDEC card).

All the Standard Ports

The PowerBook 2400c's slim AC adapter uses a thin, two-wire AC power cord; all currently shipping PowerBooks now use AC power supplies that are also compatible with those of the older Duos. The

lithium ion battery is specific to the 2400c, however. VST (508/263-9700, www.vsttech.com) plans an external battery charger for the 2400c.

Unlike the Duo, which offered only minimal ports unless you plugged into an accessory dock, the 2400c includes all the standard Mac ports: ADB, SCSI (via an HDI-30 square connector as in other PowerBooks), a single serial port, stereo audio in and out, video out, infrared (with IRTalk for Apple devices, and 1Mbit IRDA when appropriate drivers are available), and two PC Card slots. The

REAL PRODUCTS REAL RATINGS

Reviews you can trust: Unlike other publications, Macworld rates only final shipping products, not prototypes. What we review is what you can actually buy.
Outstanding ★★★★★ = 9.0–10.0 Very Good ★★★★ = 7.0–8.9 Good ★★★ = 5.0–6.9 Flawed ★★ = 3.0–4.9 Unacceptable ★ = 0–2.9

recessed SCSI and serial-port connectors cause some difficulty: L-shaped SCSI adapters won't fit, and a few serial-port plugs with oversize moldings—such as Farallon's single phone-plug LocalTalk adapter—barely fit. More-conventional cables, including Apple's SCSI cables and all common serial-port cables, fit without difficulty. (Newer Technology is planning to release a simple \$199 BookEndz dock, which connects to the back and brings out all the ports, and will also accept all the problem plugs.)

The 2400c features a small, VGA-style video-out port that's standard on PCs; Apple supplies an adapter to accommodate the larger Power Mac-standard video connector. The built-in 10.4-inch active matrix LCD screen displays thousands of colors with a resolution of 800 by 600 pixels; it's sharp, bright, and quite legible despite its relatively small size-to-pixel ratio.

The PowerBook 2400c doesn't offer a wide range of external display resolutions: thousands of colors at 640 by 480 or 800 by 600 pixels, but only 256 colors at 832 by 624 or 1024 by 768 pixels. On the other hand, a choice of refresh rates means you avoid the problem of flicker. As with the 3400, the 2400c's video circuit supports either single or mirrored display, although mirror mode runs only in 80 by 600 pixels; consequently, the 2400c can drive older 640-by-480-pixel projection panels only with its LCD turned off.

The 2400c's audio-input plug is a standard stereo miniplug that takes line-level signals. Since the microphone is once again badly placed near the keyboard and spinning hard drive (the top of the screen would be a little better), you'll need to connect an external microphone to achieve a decent-sounding record-

ing. Although Apple says that its Omni microphone (included with desktop systems) will work with the 2400c, the output level is too low for satisfactory results. The simplest solution is MicNotePad Lite from Nirvana Research (moof.com/nirvana/), an audio recording program that includes an input-boost feature that is adequate for many standard microphones. Otherwise you'll have to build an adapter for the Apple PlainTalk microphone (see "The All-Purpose PowerBook," *PowerBook Notes*, *Macworld*, January 1996) so it can work with the 2400c.

Lacking the 3400c's internal PCI-style slot, the 2400c offers no built-in modem or Ethernet, although you can add them via a PC Card; 3400c-compatible cards should work, but check with each product's vendor before buying one. Like the 3400c, the 2400c supports Zoom video through the lower PC Card slot.

One standard PowerBook "port" is missing from the 2400's lineup, however—a security slot for locking the computer to a table or desk.

Keyboard Contortions

The 2400c was originally designed for the Japanese market, where few people touch-type. As a result, the 2400's tiny keyboard poses some ergonomic challenges. At 87 percent of standard size, it is distinctly smaller than the Duo's, which is only 5 percent smaller than a standard-size keyboard.

I've never had trouble switching between a Duo and a desktop keyboard, but the 2400c is another matter. Although I am able to touch-type on the 2400c, my fingers feel much happier on a Duo keyboard. Your experience may vary, of course; two-finger typists seem to have less trouble with crowded keys. Posing

another usability quirk, the keyboard lies flat—there's no mechanism for tilting up the rear of the computer.

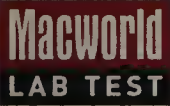
On the positive side, the 2400c does have function keys as well as cursor keys arranged in an inverted-T pattern, but in every other way the keyboard layout falls short. To slightly reduce manufacturing costs for the U.S. model, Apple and its partner IBM Japan used the same keyboard switch positions as those of the Japanese version. The result is a scrambled keyboard, the worst ever made for a Macintosh. The delete, return, and right shift keys are not only too small, but each is positioned an extra space over to the right because Japanese keyboards have an extra row of vertical keys.

What's worse, the cramped keyboard dimensions easily could have been avoided. The 2400c's case is actually large enough to accommodate a Duo-size keyboard; its rounded sculpting and the odd layout force the smaller keys. It's a ready-made opportunity for a keyboard maker.

Macworld's Buying Advice

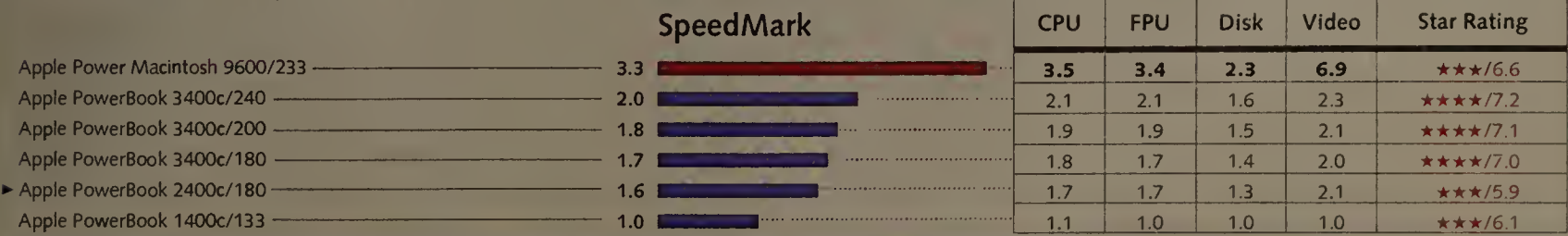
If you can live with the keyboard's shortcomings, you will probably love the 2400c, despite its high price and the fact that you'll need at least a 32MB RAM card. I still consider the Duo a better writing tool, although the 2400c is unquestionably a much better computer.—CARY LU

RATING: ★★ ★/5.9 **PROS:** Fast, lightweight, and compact; offers all standard ports. **CONS:** Tiny, cramped keyboard with nonstandard layout. **COMPANY:** Apple Computer (408/996-1010, www.apple.com). **LIST PRICE:** \$3500 as tested (32MB of RAM, 1.3GB hard drive, 256K cache).



PowerBook 2400c—Solid Subnotebook Performance

Best overall performance. Longer bars are better. Bold indicates best result in a specific test. New system. An Apple Power Macintosh 7100/80 has a SpeedMark score of 1.0.



Behind Our Tests For details on our benchmarks, see *Mac Superguide*, September 1997, or www.macworld.com/tests/.—Macworld Lab testing supervised by Mark Hurlow

QuickTime VR Tools

NEW STITCHING SOFTWARE MAKES VR A REALITY

APPLÉ'S QUICKTIME VR TECHNOLOGY lets you create interactive panoramic images that make viewers' heads spin, encouraging them to explore everything from scenic vistas to home interiors. But until recently, producing a panorama was virtual torture. Aside from freeware tools (see *Media*, *Macworld*, January 1997) that yielded disappointing results, the only alternative was Apple's QuickTime VR Authoring Tools Suite.

Three new programs make creating QuickTime VR movies virtually painless: PictureWorks' Spin Panorama, Panimation's Nodester, and Live Picture's PhotoVista. Both Spin and Nodester are designed specifically for QuickTime VR moviemaking; PhotoVista creates movies for Live Picture's RealSpace technology, a QuickTime VR competitor, but also lets you save movies in QuickTime VR format. Apple has also updated its QuickTime VR Authoring Tools Suite. Version 2.0 isn't any easier to use than its predecessor, but it does offer some significant features that the other programs lack.

Photographing in Circles

The first step in creating a QuickTime VR panorama is to take a series of photographs. You rotate the camera after each shot until you've captured 360 degrees, allowing some overlap between images so the software can stitch them together.

Of the authoring programs I tested, only Nodester can control a camera during the photography phase. Nodester includes plug-in modules for Apple's QuickTake 100 and 150 (but not the 200), for Polaroid's PDC-2000, and for a QuickTime-compatible video-digitizing card. With these plug-ins, you can snap an image by clicking the mouse button—handy if you have a PowerBook tethered to your camera. Panimation plans to make plug-ins for additional cameras available from its Web site.

Importing and Tweaking

After you've shot an image sequence, you import the images into your QuickTime VR authoring program. Nodester and Apple's suite require source images in

PICT format; PhotoVista and Spin import additional formats, such as JPEG.

Nodester, Spin, and PhotoVista provide a workspace in which you specify source images, stitch them, and save them as finished panoramas (see "Spin Doctoring"). PhotoVista, Nodester, and the Apple tools require you to specify the focal length of the lens you used or the images' field of view. With presets for dozens of digital cameras and lens for-



Spin Doctoring Like Spin, Nodester (top) and PhotoVista (bottom) give you an interactive workspace in which you build your VR panoramas.

mats, PhotoVista has the edge over Nodester—choose your camera, and PhotoVista sets the technical details for you. Spin doesn't require you to enter any lens or field-of-view information: you just specify the folder containing the source images. Unfortunately, you pay for this simplicity later in the production process.

Depending on how your camera was oriented during the photography phase, you may need to rotate the source images 90 degrees. PhotoVista, Nodester, and Apple's suite let you rotate all the images automatically; with Spin, you have to rotate the images one at a time.

Nodester is unique among the programs in providing a built-in image editor that you can use to tweak an imported photo. The editor's tools—an airbrush, paintbrushes, and a rubber-stamp tool—are limited, but it's perfect for simple retouching, such as removing a telephone pole or other intrusions.

A Stitch in QuickTime

In the stitching phase, QuickTime VR software blends the source images into a seamless panorama. All the programs except Spin handle this process automatically by identifying areas of overlap, then combining the images at those points.

You can also fine-tune the correlation process manually. PhotoVista's manual-stitching features are the best—you drag one image until it overlaps its neighbor precisely, or use the arrow keys to nudge the image in single-pixel increments. Nodester doesn't let you drag images; you have to press the arrow keys or click on arrow buttons in the Nodester window. At least Nodester lets you reverse an action; PhotoVista lacks an Undo command. But PhotoVista is the only program that offers a convenient "preview stitch" mode, which performs a fast, low-resolution stitch you can use to check your lens and correlation settings.

With Spin, manual stitching is your only option. You tell Spin where images overlap by positioning four sets of control points for each—a time-consuming, labor-intensive job. This shortcoming alone makes Spin unsuitable for high-volume QuickTime VR production.

Saving and Compressing

The result of a stitching session is a very wide image file containing the panorama. All the programs tested let you save this file for printing or for subsequent tweaking in an image-editing program.

Nodester's unique built-in image editor also comes in handy for working with stitched panoramas; besides basic editing, you can resize a panorama (handy when you want to create small VR movies for fast Web downloading) and sharpen it. Nodester's fine-tuning features are also by far the easiest to use: simply navigate to the portion of the panorama you want to be visible, and click on the Set button. With Apple's crude tools, you must calculate and enter these settings manually.

After stitching the images, you save the panorama as a VR movie. Nodester

The QTVR Panorama: Four New Development Tools

	Nodester	PhotoVista	QuickTime VR Authoring Tools Suite 2.0	Spin Panorama
Company	Panimation	Live Picture	Apple Computer	PictureWorks
Star Rating	★★★★/8.0	★★★★/7.8	★★★★/7.8	★★★/6.9
Price	\$169.00	\$129.00	\$395.00	\$99.95
Phone	407/599-9697	408/438-9610	408/996-1010	510/855-2001
Web address	www.panimation.com	www.livepicture.com	www.apple.com	www.pictureworks.com
Pros	Excellent control over movie output; built-in image editor; powerful feature set.	Inexpensive; fast; small memory footprint; RealSpace panoramas are compact.	Unmatched feature set; support for multiple-node movies; full support for QuickTime VR 2.0.	Inexpensive; easy to use.
Cons	Limited support for cameras and lenses; no printed manual.	Poor QuickTime VR export; no Undo command.	Extremely difficult to learn and use; expensive.	No automatic stitching; minimal control over final movie.

and the Authoring Tools Suite give you the greatest control over the finished movie; for instance, you can specify the portion of the panorama you want to be visible when the movie opens, as well as its initial zoom settings. PhotoVista and Spin don't allow such adjustments.

Apple's tools and Nodester are also the only programs that let you choose the compression scheme for the final movie. The Cinepak compressor is popular for QuickTime VR work, although Apple's latest QuickTime VR browser plug-ins also support JPEG, which allows for smaller (and therefore faster-downloading) movie files. A Cinepak-compressed VR movie might range from 180K to 1MB, while a JPEG-compressed movie can be around 50K.

PhotoVista is designed for creating movies in Live Picture's RealSpace format, which uses JPEG compression exclusively for nice, compact panoramas. When you save a PhotoVista panorama in QuickTime VR format, however, it uses Cinepak compression—resulting in significantly larger files. Another advantage of Real Space over the current version of QuickTime VR is that a Web site's visitors can begin navigating a panorama almost immediately while it's downloading, and it supports spherical panoramas (which let users look straight up and down). But there's a catch: to view RealSpace movies, your site's visitors must download and install the RealSpace browser plug-in. Apple's QuickTime plug-in, by comparison, is included with Netscape Navigator 3.0 and later as well as with QuickTime for Windows, making it nearly ubiquitous.

Nodester and Apple's authoring tools

let you create clickable hot spots that take users to other Web pages or VR movies. (Neither PhotoVista nor Spin supports hot spots.) Nodester's hot-spot editor is particularly easy to use: just draw the hot spot and type a URL. But Apple's product is the only one that lets you create a multiple-node VR movie—a single movie file that contains multiple panoramas linked via hot spots. (Multiple-node movies tend to be too large for Web distribution and are typically limited to CD-ROMs.)

Performance and Memory

Correlating and stitching a dozen or more images into a navigable panorama is a complicated job that requires a fair amount of memory and processing punch. Of the programs tested, PhotoVista has the humblest system requirements—it runs in a mere 1.8MB. Spin's suggested memory allocation is 12MB, Nodester's is about 16MB, and Apple's suite needs a colossal 40MB.

PhotoVista is the fastest of the programs that stitch automatically, but Nodester is no slouch—its performance was quite satisfactory on a 200MHz 603e-based machine. As for Apple's tools, performance is less of an issue because the software doesn't provide the highly interactive user interfaces of the other three programs; you create a script and run it, then go off and do other things while the software prepares your movie.

Macworld's Buying Advice

For creating single-node QuickTime VR movies, you can't beat Panimation's Nodester. Although it lacks a printed manual and could use more tips and back-

ground information, it has a smooth, efficient user interface and offers far more control over the VR development process than either Spin or PhotoVista. PictureWorks' Spin is suitable for casual QuickTime VR tinkering on slower machines, but its lack of automatic stitching and minimal output options make it unusable for serious VR work. Apple's QuickTime VR Authoring Tools Suite remains the only option for making multiple-node movies and for taking advantage of the advanced capabilities of QuickTime VR 2.0. This package is still difficult to use, however—expect to invest many hours getting up to speed with it. PhotoVista is an excellent choice if you want to create panoramas for the RealSpace technology, though the advantages of RealSpace over QuickTime VR are outweighed by the need to download a plug-in to view the panoramas; after all, what good is having smaller, progressively downloading VR files if your site's visitors don't download and install a plug-in to view them?

Although PhotoVista, Nodester, and Spin make creating VR movies easier than ever, there's still room for improvement. I'd like to see a gamma-adjustment option that lets you lighten a panorama for better display on Windows machines. And for Web movies, I'd like an option to specify a target file size and have the program automatically adjust compression and scaling options to arrive at that size.

But overall, the new generation of development tools is a dream come true for anyone who wanted to make QuickTime VR movies but was intimidated by Apple's developer-oriented tools. Approachable, affordable QuickTime VR development is finally a reality.—JIM HEID

AppleShare IP 5.0

SERVER SOFTWARE IS A JACK-OF-ALL-TRADES,
FASTER THAN NONE

THE LATEST VERSION OF APPLE'S server software lets a Mac OS file server wear many hats. In addition to acting as a standard file server, AppleShare IP 5.0 serves up Web pages, delivers files via FTP, and distributes Internet mail. More important, it adopts TCP/IP as a full-fledged Mac communications protocol. (The print server is the only component of version 5.0 that's still AppleTalk-only.) The server software still speaks AppleTalk, so it's fully compatible with existing Mac networks, but TCP/IP support means it can share files, mail, and Web pages with PCs and Unix workstations as well.

Unfortunately, version 5.0's file server is scarcely faster than its predecessor, AppleShare 4.2.1, and woefully slow compared with Microsoft Windows NT Server (see "AppleShare IP vs. Windows NT: Windows Wins"). As a Web server, AppleShare IP 5.0 holds its own against its main Mac competitor, but also comes up short compared with Windows NT Server.

What's in the Box

AppleShare IP actually comprises five separate applications—a file server, a Web server, an FTP server, a POP mail server, and a print server—along with a nice collection of bundled software. All five programs are tightly integrated via OpenDoc; for example, you can set privileges for Web, file, and FTP access from a single window, and move between management applications via a button or menu.

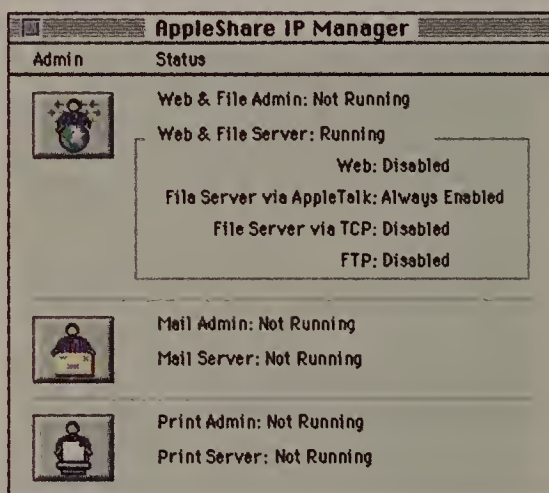
Although AppleShare's interface has been updated to provide easy administration and full integration among components, the package has a few blemishes leftover from previous versions. You still can't manage multiple AppleShare servers from a single Mac, or split AppleShare IP's applications among several Macs; you can't administer a server remotely without Apple Remote Access or Farallon's Timbuktu; and despite support for TCP/IP-based services, you can't perform any management tasks via TCP/IP.

To use AppleShare IP, you need a PowerPC-based Mac, System 7.6 (included) or greater, and 32MB of RAM.

No Cobwebs Here

The ability to serve Web pages from a Mac is nothing new, but AppleShare IP is Apple's first attempt at commercial Web-server software. It's also the first Mac implementation to combine a Web server with a file server.

Apple's Web server allows you to store entire Web sites on a local workgroup server with an Internet connection. You can make the server accessible from within your organization just as you would a file server; that way, users can publish their own Web pages by dropping HTML and graphics files into a folder



Integrated Admin AppleShare IP Manager provides status information on the server's components; the three buttons launch applications that configure server functions.

on the server. Although you can add features to the Web server with commercial and shareware CGIs, AppleShare IP 5.0 doesn't support StarNine WebStar-compatible plug-ins. (Version 5.5 should support plug-ins, according to Apple.)

Apple isn't marketing AppleShare as a full-fledged Web server, but tests show that AppleShare IP gives WebStar a run for its money. WebStar 2.0 and AppleShare IP topped out at 108 and 109 connections, respectively, with AppleShare IP in the lead up to a client load of 56. Windows NT Server's built-in Internet Information Server, on the other hand, easily handled 840 connections per second with 60 clients connecting. These results are encouraging for administrators looking to avoid dedicating a server to Web access,

but it's important to remember that adding file-server and other chores to an AppleShare IP server will slow things down if you have a busy site.

File Server Face-Lift

The most important new feature in AppleShare IP 5.0—TCP/IP-based file-server access—is relatively transparent. Whether using AppleTalk or TCP/IP, users mount server volumes from the familiar Chooser or by creating aliases that point to shared volumes, just as with previous versions of AppleShare. Administrators have it just as easy: once the server's TCP/IP connection is configured, there's no need to make a distinction between AppleTalk and TCP/IP privileges. TCP/IP support also allows Apple servers to comply with the corporate requirement that servers support industry-standard protocols.

To test AppleShare IP's file-serving capabilities, we compared it to its predecessor, AppleShare 4.2.1, and to its most formidable competitor in the PC marketplace, Windows NT Server. Using the fastest workgroup server available, with plenty of memory and storage (to prevent inadequate hardware from bogging down the server software), we ran the NetBench suite to simulate the impact of up to 60 clients connecting to and transferring files from the server. We also tested a similarly configured Windows NT server.

AppleShare IP using AppleTalk was slightly slower than AppleShare 4.2.1. TCP/IP-based file transfers were faster than those done over AppleTalk, but only by 17 percent at a client load of 52 (where TCP/IP speed maxed out). In comparison, Windows NT Server was almost five times faster than AppleShare IP when both were running at their peak speeds.

While TCP/IP-based file transfers from an AppleShare IP server to Mac clients are faster than file transfers over AppleTalk, the fact that TCP/IP uses larger data packets means it can't overcome the bottlenecks created by the Mac OS itself. Because Windows NT Server uses its own AppleTalk stack to communicate with Mac clients, TCP/IP doesn't account for the server's stellar performance in our tests; rather, the server's superior file and I/O systems are responsible for its success. This debunks the myth that AppleTalk is an insurmountable obstacle to speedy server performance.

continues



Maybe it's time you broke out of that 11 x 17 world.

Creatively speaking, nobody likes to work in a box. But if you're still using conventional desktop printers, that's precisely what you're doing.

Croma24™ from ENCAD® can take your ideas much further. It's a versatile inkjet printer capable of producing photo-realistic images in vivid color at widths of up to



24 inches, and lengths of up to 15 feet. A fact that should have you salivating at the possibilities.

Because now, design firms can easily create packaging prototypes. Ad agencies can produce full-size storyboards without tiling. And corporate types everywhere can make the big presentation exactly that.

ENCAD Croma24 is easy to operate. It's Mac and PC

compatible. And it'll help save time and money by minimizing your reliance on outside service bureaus.

And, ENCAD Croma24 starts at **\$1,995**. So you can unleash your creativity while still pleasing the folks in Accounting. For more product information, visit our web site at www.encad.com. Or call 1-800-45 ENCAD for your nearest Authorized Reseller. Then watch your imagination truly soar.



ENCAD

© 1997 ENCAD and Croma24
are trademarks of ENCAD, Inc.

Circle 65 on
reader service card

On the other hand, if you use your file server primarily to move large files to and from a few users' Macs, AppleShare IP over TCP/IP may offer a speed boost over AppleTalk-based AppleShare. When we copied a 50MB file from the AppleShare IP server to a Power Computing PowerCenter 120 client, TCP/IP performed 86 percent faster than AppleTalk.

New and Old Server Tools

Like file sharing, AppleShare IP's FTP server gives users access to a directory of files. Server administrators can use the same user and group privileges available from the file and Web servers to grant FTP access, and can make server folders accessible via file sharing or FTP. Several stand-alone Mac FTP servers are available, including Maxum Development's Rumpus, but AppleShare IP's integration of FTP with other services sets it apart. Besides being familiar to most Internet users, FTP has the advantage of being platform-independent—all you need is an FTP client and an Internet connection.

Stand-alone e-mail applications often perform poorly from a file server, or actually conflict with AppleShare. AppleShare IP addresses this problem with its own mail-server software. Based on Claris OfficeMail, the software supports both LAN-based (AppleTalk) and Internet (POP) e-mail. Users can retrieve their AppleTalk e-mail with Claris EMailer 2.0, included with AppleShare IP, and their Internet mail from any Mac or PC POP client (including EMailer). Adding a user account is as simple as pulling down a menu and typing the user's name. E-mail, file-server, and Web-server accounts are all managed from the same application.

Another AppleShare component, the print server, hasn't changed much since version 4.2.1. The AppleTalk-only spooler does sport a new, Desktop Printers-inspired interface, however.

Who Needs AppleShare?

AppleShare IP is more than an upgrade to a file-server application; it's a long-awaited solution for small businesses and

corporate workgroups that want to use a Mac server to publish on the Internet or want to support PC users. The integrated file, Web, FTP, and mail services will allow some companies to forgo the purchase of dedicated server hardware and software for e-mail or the Web.

TCP/IP-based file access is the biggest boon to workgroups and departments within large companies. Because AppleShare supports FTP, departments can share files with PC users in the office or make them available to the public. Using the bundled AppleShare Client for Windows (Windows 3.1) or COPS Talk, CoOperative Printing Solutions' AppleTalk client software for Windows 95 (see *Reviews*, November 1996), Windows users can even mount AppleShare volumes. E-mail access through any POP client is also completely cross-platform.

The Shape of Things to Come

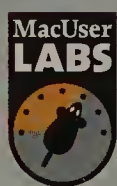
A few of AppleShare IP's deficiencies should be corrected in version 5.5 (slated for release this winter). Along with support for WAPI, the Web server plug-in architecture developed by StarNine, the update will support the IMAP mail standard and LDAP directory services. Apple also plans to move toward a browser-

based interface, which would allow greater management flexibility as well as remote administration. Version 5.5 won't be completely browser-based, but features such as Users & Groups management should be. And when Rhapsody is released, AppleShare IP will likely become even more focused on TCP/IP and browser-based management.

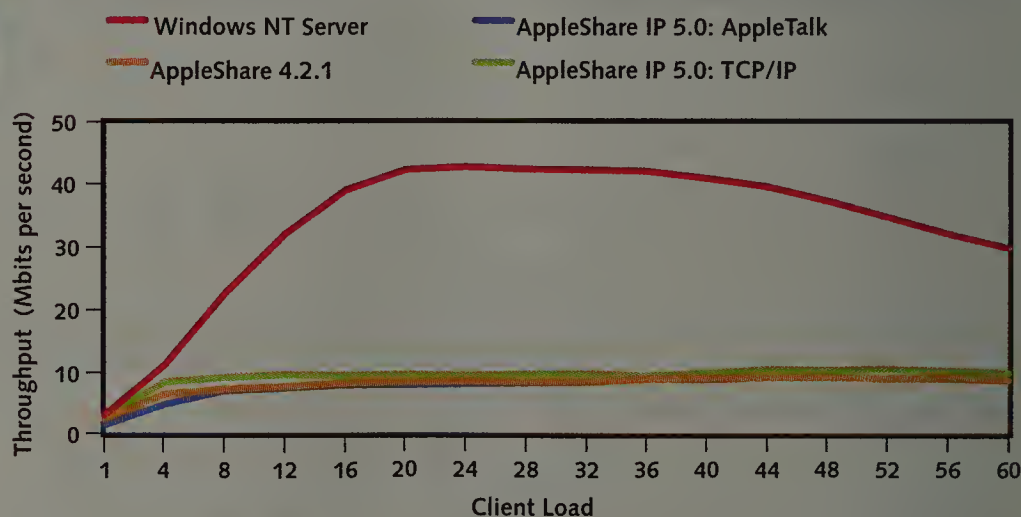
Macworld's Buying Advice

If you're counting on AppleShare IP to speed up your network or fend off a move toward Windows NT Server, you may be disappointed. But if you like the idea of a multifunction Internet server and appreciate Apple's elegant integration and simple server administration, AppleShare IP may be just what your workgroup or small office needs.—SHELLY BRISBIN

RATING: ★★ ★/6.8 **PROS:** TCP/IP-based file sharing; elegant interface; good integration among applications. **CONS:** Disappointing performance; AppleTalk-only print server; no remote administration. **COMPANY:** Apple Computer (408/996-1010, appleshareip.apple.com/appleshareip/index.html). **LIST PRICE:** For 5 clients \$799; for 50 clients \$1349; for unlimited clients \$1999.



AppleShare IP vs. Windows NT: Windows Wins



Behind Our Tests

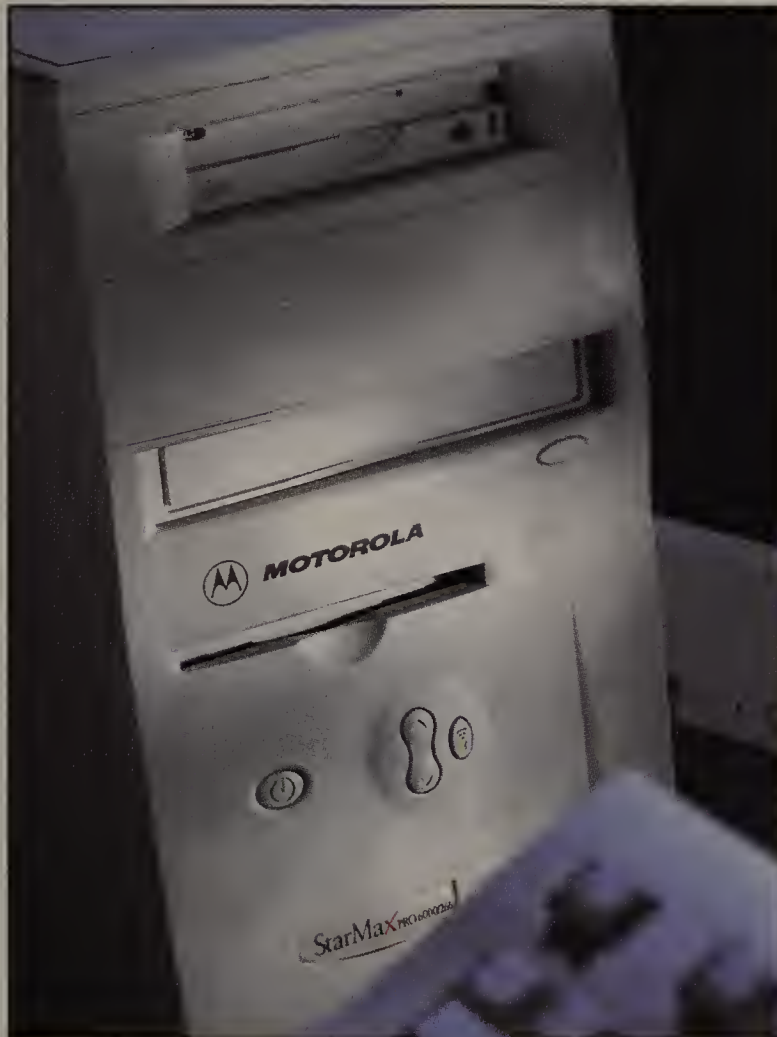
The NetBench suite is designed to stress a file server by simulating heavy client activity. To test AppleShare, we used an Apple Workgroup Server 9650/233 with 128MB of RAM and two 4GB Seagate drives arranged in a software-controlled RAID 0 array. We connected the server, along with 60 Mac client machines running System 7.5.5, to a 100BaseT Ethernet network and installed Open Transport 1.1.2 and AppleShare client 3.7 on each client. (For the AppleShare 4.2.1 test, we used AppleShare client 3.6.) This high-powered server and network configuration ensured that any speed bottlenecks would be caused not by the server or the network, but by the software being tested. We assembled a similar PC configuration (HP Netserver E-40 with two 2GB Seagate disk drives, arranged in a software-controlled Level 0 RAID) to test Windows NT Server.—MacUser Labs testing supervised by Eric Chapman

Finally, A Computer That Takes PhotoshopTM To Its Knees And Makes It Beg For Mercy.

Introducing StarMax Pro. Featuring The Next Generation Power PC 750 Processor.

We know that true computer performance is defined by what you do with it. With StarMaxTM Pro, you'll have the power to run monstrous files and toss them around like rag dolls. Whether you're using Premier,TM Strata,TM Illustrator,TM After Effects,TM or any other high-end graphics program, StarMax Pro lets you maximize your ability as well as your creativity.

As another benefit, StarMax Pro's new parallel port allows you to



use standard PC printers. Now you can stretch your budget further by choosing from a much wider, less costly selection of printers.



Add to all this our free one-year on-site service and the only five-year limited warranty in the Mac industry, and you'll see why the best way to get your work done is to buy your new MacTM OS system from Motorola.



The New StarMax Pro Features:

Next Generation 233 or 266 MHz PowerPC 750 Processors w/ 66 MHz Bus
Up to 1GB of RAM • 4.3GB Hard Drive • 100MB Iomega ZipTM Drive
24x CD-ROM • Twin TurboTM Graphics Card • 5-Year Limited Warranty • Mac OS 8

*Get more info on our graphics workhorse.
call 1-800-759-1107 ext. MWD3
or surf to www.mot.com/starmax/mwd3*

Circle 208 on reader service card



MOTOROLA
Computer Group

What you never thought possible.TM

Internet Content Filters

CYBERPATROL, SURFWATCH, X-STOP AREN'T FOOLPROOF

ALTHOUGH THE WEB CAN BE A great educational resource, it also provides easy access to sites inappropriate for kids. Content-filtering tools help by blocking access to sites, letting you more readily give children unmonitored access to the Web.

Three filter products—Microsystems' CyberPatrol 2.0, SpyGlass's SurfWatch 3.0, and Log-On Data's X-Stop 1.0—block Internet access by using site lists, word filters, and content categories. Each company maintains its own proprietary lists of "bad" sites and content triggers, which you can modify as needed.



Censored CyberPatrol monitors Web use with selective categories, filters for multiple users, and control access based on total usage and time of day.

Basic Blocks

All three products ship with a set of basic filters, geared to block unsuitable sites and to prevent search-engine queries of blatantly inappropriate terms. But none of the products work to their full potential until you update the filters via the vendor's online service. Each vendor maintains an up-to-date list of barred sites and services. Keep in mind that you must pay for updates after the first year, and CyberPatrol even charges for updates during the first year of use.

SurfWatch updates its filters every time you reboot, and CyberPatrol lets you click on a button in its administration panel to get the latest updates. X-Stop, however, requires you to download filters from a Web site, then decompress and manually execute the updater. SurfWatch's automatic approach is the most foolproof, and you can get updates on demand between reboots. CyberPatrol

and X-Stop, though, require that you periodically update the filters yourself, a chore that can be easily neglected.

In addition to using filter updates, each product lets you adjust the filtering controls. With SurfWatch and CyberPatrol, you can engage broad filter categories, such as sexually explicit, gambling, and violence; CyberPatrol's list of 16 categories gives you finer control than SurfWatch's list of 4. Both also let you block access to Internet Relay Chat (IRC), particularly important because the interactive nature of IRC makes it easy for kids to divulge information about themselves. SurfWatch only gives you all-or-nothing blocking, while CyberPatrol lets you block based on chat-group names or trigger words that may occur in inappropriate discussions. X-Stop lacks both category controls and IRC blocking.

Customize Your Control

Each product lets you add to the list of blocked sites and words. Both CyberPatrol and SurfWatch have a clear, intelligent interface for this function. X-Stop uses a clunky dialog box that only lets you make blind changes—you can't see changes you've already made.

Other Internet services, such as FTP sites and certain online games, can deliver material just as harmful as what a child might find in a Web browser. All the products provide name-level protection for other services: if the site name is on the exclusion list, access to any service at the site is blocked. CyberPatrol includes the ability to content-check other services, including games and applications, preventing even the downloading of decompression utilities.

Beyond its filtering capabilities, CyberPatrol offers two other useful features. Multiple password-protected filters let you tailor protection for a particular age group or individual. CyberPatrol also lets you limit access based on total usage or times of the day. With SurfWatch's default home page, the Yahoo!liger's Web site, you can abandon filtering altogether, in favor of a search engine that permits access only to previously inspected and cleared sites.

Setting Up Your Sitter

SurfWatch includes a concise printed manual with sections such as troubleshooting, and convenient online help. X-Stop's user manual contains all the essential information, but its coverage of both PC and Mac platforms makes it confusing. The disk lacks an installer, and the package lacks both online documentation and troubleshooting aids. CyberPatrol forgoes printed documentation altogether, providing only an online guide.

Macworld's Buying Advice

All the products lived up to filtering expectations, staying out of the way except when necessary to block access. For the most convenient and foolproof blocking, SurfWatch is hard to beat. Its automatic updates and simple category-based filtering are easy to understand and maintain. If you need more control, or need to provide filtering for various individuals or age levels, go for CyberPatrol. X-Stop works well at filtering but lacks both the control and convenience features of the other products. Its low price, though, includes a year of daily filter updates.—MEL BECKMAN

CyberPatrol 2.0

RATING: ★★★★★/8.0 **PROS:** Large number of filter categories; multiple-user support; fine control of filtering options. **CONS:** No printed documentation; filter updates aren't automatic; charge for first year of weekly updates. **COMPANY:** Microsystems Software (508/879-9000, www.microsys.com). **LIST PRICE:** \$29.95; weekly updates \$29.95 per year.

SurfWatch 3.0

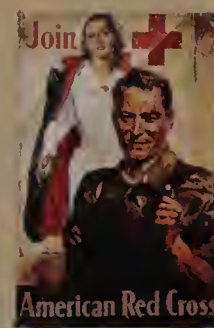
RATING: ★★★★★/8.5 **PROS:** Excellent documentation; automatic filter updates; category-based filter controls. **CONS:** All-or-nothing block on IRC. **COMPANY:** Spyglass Software (415/948-9500, www.surfwatch.com). **LIST PRICE:** \$49.95; includes one year of daily updates.

X-Stop 1.0

RATING: ★★★/6.0 **PROS:** Reliable operation; low overall cost. **CONS:** Filter updates are not automatic; no category filters; clumsy filter update interface. **COMPANY:** Log-On Data (714/577-4929, www.xstop.com). **LIST PRICE:** \$39.95; includes one year of daily updates.



IN AN EMERGENCY, split-second decisions mean the difference between life and death. Not surprisingly, then, the Red Cross puts a tremendous amount of importance on training and preparedness.



A good projector can save a meeting. A great one just might save a life.

MultiSync MT LCD Projectors

	MT810	MT1000
Resolutions Supported	640 x 480, 800 x 600, 1024 x 768 with AccuBlend™ technology	640 x 480, 800 x 600, 1024 x 768, 1280 x 1024 with AccuBlend™ technology
Video Compatibility	NTSC, PAL, SECAM, NTSC 4.43	NTSC, PAL, SECAM, NTSC 4.43
Brightness	550 ANSI Lumens	450 ANSI Lumens
Weight	15.5 lbs	15.9 lbs
Dimensions (W, H, D)	15.6 x 5.7 x 12.6"	15.6 x 5.7 x 12.6"
Both models are compatible with PC, Mac, and workstation computers, feature built-in audio and 2 years of InstaCare 24 hour replacement service.		

Hurricanes. War. Floods. While some would run the other way,

the Red Cross rushes in. What makes this extraordinary responsiveness possible? Their generous spirit, and an astonishing amount of training.

At NEC Technologies, we salute the Red Cross' incredible commitment to training. For it is our own commitment to training and presentations that led us to develop our new MultiSync® MT810™ and MT1000™ LCD projectors. These compact products offer the highest quality image under all lighting conditions. Simple on-screen menus

NEC MultiSync MT810 and MT1000 LCD Projectors

plus a hand-held remote make them very easy to use. They're backed by NEC's InstaCare™ 24-hour replacement service. And an introductory video gets them up and running quickly.

All of which makes them the ideal LCD projectors—whether you're training for a disaster, or just trying to keep your next presentation from becoming one. For a free guide to selecting the right projector, call us at 1-800-NEC-INFO. Or visit www.nec.com. Expect more. Experience more.



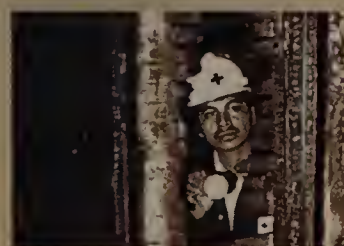
FOR MORE THAN A CENTURY, the Red Cross has been quick to lend a helping hand. In addition to disaster relief, they present comprehensive health and safety programs such as CPR, HIV/AIDS education and Nurses certification programs. In fact, the Red Cross is a leading provider of such health and safety courses.



IN A DISASTER, one of the things that helps give you peace of mind is the rigorous training of the Red Cross. In a presentation, one of the things that helps give you peace of mind is the superior performance of the new MultiSync MT LCD projectors (not to mention their reliability and incredible ease of use).



THE RED CROSS IS IN THE BUSINESS of saving lives. In some ways, perhaps, one could argue that we are as well. You see, the new MultiSync MT Series LCD projectors are so reliable that they're backed by a whole new level of customer service. It's called InstaCare service from NEC Technologies. And in the unlikely event of a problem, it guarantees a replacement projector within 24 hours at our expense.



PrimeraPro Elite

FLAWED DYE-SUB/THERMAL-WAX PRINTER

UNTIL RECENTLY, GRAPHIC ARTISTS reliably turned to combination dye-sublimation/thermal-wax printers for all their color output needs. After all, in terms of quality, a dye-sub's print was almost indistinguishable from a photograph, and having thermal-wax capabilities in the same printer meant you could produce cheap and easy proofs, moving on to the more expensive, higher-quality dye-sub prints only for color comps.

Although the near-photo quality of expensive dye-sublimation printers hasn't changed, the color output from lowly ink-jet printers has improved almost beyond belief in the last year. Since the price of dye-sub printers (and their consumables) has remained high, many graphic artists—and others who need high-quality color output—have opted for top-notch color ink-jets instead.

Fargo Electronics hopes to win back the dye-sub/thermal-wax faithful with the PrimeraPro Elite, successor to the popu-

via the Page Setup dialog box. The PrimeraPro Elite automatically switches between its parallel and serial port, but offers no Ethernet connection. An optional PostScript Level 2 package is slated to be available soon, although pricing was not set at press time.

Unacceptable Quality

Despite all of Fargo's good intentions with faster speed and improved resolution, one fact stands out: the quality of the PrimeraPro Elite's dye-sub prints remains below par. Some of it is the fault of the composite black of its CMYO ribbon: when printing Macworld Lab's QuarkXPress test document, the PrimeraPro Elite's text was more reddish-brown than true black. (The *O* stands for the clear *overlay*—FotoShield in Fargo parlance—which helps protect dye-sub prints from fading UV rays, fingerprints, and other hazards.) The quasi black also lessened the overall quality of the PrimeraPro Elite's Adobe Photoshop

one-quarter the price of the PrimeraPro Elite (see "The Proof Is in the Printing").

Simple Consumables

Whether operating in dye-sub or thermal-wax mode, the PrimeraPro Elite transfers color to the page via a roll of color ribbon resembling plastic wrap. Installing the ribbon is as easy as pie: you drop the ribbon and its take-up spool into a plastic caddy, and put the whole thing into the printer. The PrimeraPro Elite ships with two caddies—one for dye-sub and one for thermal-wax—to make switching ribbons a snap, even at midroll.

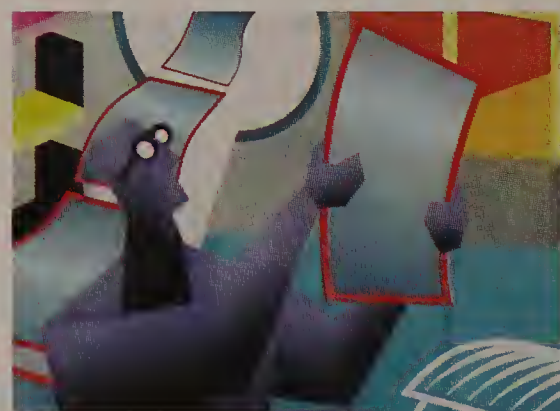


ARNOLD TIOSEO

The PrimeraPro Elite comes with sufficient dye-sublimation paper and CYMO ribbon for 10 "A4 extended" letter-size prints. CYMO ribbons for 50 prints cost \$111.95; a 50-sheet pack of dye-sub paper costs \$52.95. Supplies for lower-quality thermal-wax proofs are cheaper: four-color ribbons cost \$45; paper costs \$9.95 for 200 standard pages, or \$21.95 for 200 sheets of thicker premium stock.

Macworld's Buying Advice

As we stressed the last time *Macworld* rated dye-sublimation printers (see "Full-Proof Printers," January 1996), speed is important in this product class, but output quality is paramount. And although the PrimeraPro Elite is faster and less costly than Fargo's Editors' Choice-winning Pictura 310, the PrimeraPro Elite's print quality falls so far below basic expectations for a dye-sub printer that I can't recommend it.—SUZANNE COURTEAU



The Proof Is in the Printing The PrimeraPro Elite's output (left) offers vibrant, continuous-tone color but an unacceptable number of ugly artifacts. Comparing its output to that of the \$449 Epson Stylus Color 800 (right) shows the Fargo's \$2195 price tag is too high.

lar PrimeraPro. The PrimeraPro Elite offers both CMY dye-sub output and CMYK thermal-wax prints, and delivers them both at faster speeds than its predecessor. Even better news: for professionals who need in-house color proofing and final output that doesn't cost a fortune, the PrimeraPro Elite costs less than half as much as Fargo's top-rated Pictura 310.

Fargo has also improved the printer's resolution from that of the PrimeraPro. The printer defaults to 300 by 300 dpi, but you can adjust it to 600 by 300 dpi

test image, which lacked vibrancy as well as contrast in shadowed areas.

The real letdown, though, came in the illustration test, a Macromedia Free-Hand document. Although its colors were bright and relatively true to those of the original, the image suffered from excessive ghosting and the bleeding of image elements into surrounding areas. This flaw in the dye-sub output is particularly egregious when output samples are compared with the best-quality prints from the Epson Stylus 800—a printer that costs

RATING: ★★/3.8 **PROS:** Full-bleed letter-size prints; inexpensive for dye-sub/thermal-wax combo; knowledgeable technical-support staff. **CONS:** Unacceptable dye-sub prints. **COMPANY:** Fargo Electronics (612/941-9470, www.fargo.com). **LIST PRICE:** \$2195.

FREE Consumer Catalog from APC



If you just bought your first Mac, or run a company that needs hundreds, you can depend on the reliability and peace of mind that comes with APC products. APC protects more computers for more companies in more countries than anyone in the world.

☐ **YES!** I'd like to receive my FREE catalog.

☐ **NO,** I'm not interested at this time but please add me to your quarterly newsletter mailing list.

Name: _____

Title: _____ Company: _____

Address: _____

City: _____ State: _____ Zip: _____ Ctry: _____

Phone: _____ Fax: _____

Brands of Servers/Macs used: _____ # _____

Brands of UPS used: _____ # _____

* Allow 6 - 8 weeks for delivery.

Please fill in all information completely for prompt service.

©1997 APC. All Trademarks are the property of their owners. BF20EBRC-M • E-mail: apcinfo@apcc.com • 132 Fairgrounds Road, West Kingston, RI 02892 USA



(888) 289-APCC x8250

Fax: (401) 788-2797

www.apcc.com



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 36 WEST KINGSTON, RI

POSTAGE WILL BE PAID BY ADDRESSEE

APC[®]

AMERICAN POWER CONVERSION

DEPT. BRC-D7-BO

132 FAIRGROUNDS ROAD

PO BOX 278

WEST KINGSTON RI 02892-9920



"My business can't stop when the power does...."

Back-UPS® Office™'s instant battery back-up can keep you up and running even when the power goes down.

only
\$179.99
list price

... I rely on
Back-UPS® Office™ from APC."

\$30 REBATE

With the Purchase of a
Back-UPS Office

between August 1 and October 31, 1997.

You can download redemption card from our Web Site at www.apcc.com/english/promo025.htm or visit local retailers below for more info.



"I've got Back-UPS® Office™ from American Power Conversion. Back-UPS Office combines world class surge protection, a \$25,000 equipment protection guarantee* and instant, uninterruptible battery back-up power.

So when the power goes out, and it will.... I have plenty of time to save what I am working on and shut down safely.

Plus, I am protected from surge damage, keyboard lock-ups, data loss

and power problems transmitted to my workstation over data and power lines."

So, if you just bought your first computer, or run a company that needs hundreds, you can depend on the reliability and peace of mind that comes with APC products. Why? It's simple. APC protects more computers for more companies in more countries than anyone in the world.

Now, that's a reason to smile.



Look for APC power protection products - starting at \$24.95

APC's Back-UPS Office is available at:
Circle 72 on reader service card

MacMall
1-800-222-2808

MacWAREHOUSE
1-800-255-6227

FREE Consumer Catalog



- ☐ **YES!** I'd like to receive my FREE catalog.
☐ **NO,** I'm not interested at this time but please add me to your quarterly newsletter mailing list.

Name: _____

Title: _____

Company: _____

Address: _____

City/Town: _____

State: _____ Zip: _____ Country: _____

Phone: _____ Fax: _____

of Macs on site? _____

Brand of PCs used? _____ # _____

Brand of Servers used? _____ # _____

APC

888-289-APCC x8250

Fax: (401) 788-2797

www.apcc.com

D7-B0



Digital Photo Printers

TRANSFORM YOUR PIXELS INTO POSTCARDS

THREE DIGITAL PHOTO PRINTERS claim to transform electronic photo files into hard-copy masterpieces that rival photographs: Panasonic's TruPhoto Printer, Fujifilm's NC-2 Digital/Video Printer, and Fargo's FotoFun Digital Color Photo Printer. Although these printers aren't as messy and time-consuming as traditional developing techniques, only one of them approaches the quality you'd expect from a photo studio. And don't be fooled—even though there's no charge for film with digital cameras, the special photo paper evens out the cost.



SUZANNE ROADY

The Fujifilm NC-2 (top left), Fargo FotoFun (bottom left), and Panasonic TruPhoto.

Picture Perfect?

Thanks to ample documentation and easy-to-follow directions, we had each of the three printers up and running in less than six minutes. To compare output quality, we printed a colorful 300-dpi scanned image and a 128-dpi shot from an Olympus D-200L digital camera (see "Snap It," in this issue). Not surprisingly, higher-resolution scanned images produced better-looking prints than low-resolution digital camera images, which looked fuzzy compared with prints from a typical photo lab, even after we resampled snapshots to match the printer's postcard-size paper. Only the 300-dpi scanned images produced pleasing prints that mirrored the quality of traditional photographs.

Of the three devices, the FotoFun offers the best-quality pictures: its colors are bright yet not garish, its hues appear almost identical to those of on-screen images, and subtle tonal details in high-

light and shadow areas are clearly visible in each print. Even with lower-resolution digital-camera shots, the FotoFun's prints appeared sharper and more vivacious than the NC-2's and TruPhoto's results. Another FotoFun perk is its unique ability to bleed images off the edge of the paper.

Ready, Set, Print

The FotoFun is housed in a drab putty-colored box the size of an old telephone. Sure, the AC adapter looks like a brick on a leash and the printer grows like a bobcat, but the results are worth the three-minute wait. However, it's not as easy as you may think—loading the FotoFun takes practice. To begin, you press a lever that pops open the printer; unwrap one of the tinsel-thin ribbons—a tricky task if you want to avoid wrinkling it; insert the ribbon spool into a spring-loaded sprocket; then shut the printer. Refill kits for 36 additional prints cost \$40.

Unlike the FotoFun, the NC-2 and the TruPhoto share similar thermal printing technology. They don't use ink, toner, or ribbons but instead rely on heat-sensitive printing paper (packets of 20 sheets sell for \$15). The paper, packed in a light-tight bag to avoid fogging, shouldn't be exposed to light for more than five minutes. Both printers load in the same easy manner: open a front panel, insert the paper, and click the panel shut.

Aesthetically, the NC-2 and the TruPhoto are similar, except that the TruPhoto's case is blue and the NC-2's is black; each takes up about as much space on your desk as an answering machine. The only other difference is that the NC-2 unit sports controls that allow you to nab live and still shots from a camcorder, VCR, or TV. As long as the NC-2 is connected to one of these devices, you also have access to on-screen menus that let you determine the orientation and position of the picture and give you the option to print up to 16 thumbnails per sheet.

Because all three printers need four passes to produce a single image, printing can be tedious. Lacking a controller to process print jobs, they all rely on the Mac to do the bulk of the grunt work. Theoretically, the more powerful your Mac, the

quicker the job. Shots emerged from the FotoFun and the NC-2 in less than three minutes—a full 60 seconds ahead of Panasonic's TruPhoto.

Despite their transparent UV coating, prints from these models fade sooner than an ordinary photograph would. Our advice: preserve prints by storing them in an album and avoiding bright rooms and fluorescent lights.

Macworld's Buying Advice

With Fargo's FotoFun printer, dreaming up fun projects is part of the thrill. Simple printouts can become promotional business postcards, birthday party invitations with a photo of the guest of honor, or custom-made holiday greetings. The Fargo and Fujifilm printers cost under \$700, but whether you're using high-resolution images from a scanner or screen-resolution images from a digital camera, only the FotoFun produces first-rate prints that approach the quality of traditional prints from film. If money is tight, consider the Panasonic TruPhoto, which offers slightly better color quality than the Fujifilm NC-2 at a price \$300 lower.—JOHN GODDARD

FotoFun Digital Color Photo Printer

RATING: ★★ ★/6.6 **PROS:** Prints high-resolution images sharply; excellent color saturation; small footprint. **CONS:** Noisy; detailed setup required. **COMPANY:** Fargo (612/941-9470, www.fargo.com). **COMPANY'S ESTIMATED PRICE:** \$599.

NC-2 Digital/Video Printer

RATING: ★★ ★/4.0 **PROS:** Decent photo quality with high-resolution images; captures, stores, and prints shots from TV or VCR; prints up to 16 images in a single sheet. **CONS:** Faint magenta tint in images. **COMPANY:** Fujifilm (914/789-8100, www.fujifilm.com) **COMPANY'S ESTIMATED PRICE:** \$699.

Panasonic TruPhoto Printer

RATING: ★★ ★/4.0 **PROS:** Average photo quality with high-resolution images; accurate color. **CONS:** Slow; so-so detail on lower-resolution graphics. **COMPANY:** Panasonic (408/653-1888, www.truphoto.com). **COMPANY'S ESTIMATED PRICE:** \$399.

Master the Unknown Before it Masters You

Available
Now!

MASTER OF ORION™ BATTLE AT ANTARES™

"The ultimate game of galactic conquest" —Computer Gaming World

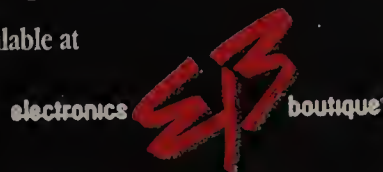


Manage and expand your colonies
throughout the universe



Share resources, declare war or demand
submission with 12 alien races

Available at



Research more than 200 technologies
to advance your race

Created by

MICRO PROSE

www.microprose.com

©1996, 1997 MicroProse Software, Inc. and WizardWorks
Group, Inc. Master of Orion and Battle at Antares are
trademarks of MicroProse Software, Inc.

System Requirements: Any 68040 or higher Macintosh with at least 8MB RAM,
color monitor and CD-ROM drive. Also accelerated for Power Macintosh.

Also available for IBM compatible PCs

MacSoft®

An affiliate of GT Interactive Software Corporation
2300 Berkshire Lane No., Plymouth, MN 55441 • 612-509-7600
Call for a free catalog or visit our website at www.wizworks.com

Circle 30 on reader service card

Plug-in Illustration Tools

GIVE ILLUSTRATOR, FREEHAND A FEATURE INFUSION

GRAPHIC ARTISTS WILL FIND A lot to like in three new plug-in collections that squeeze the last drop of creativity from Adobe Illustrator 7.0. Extensis's VectorTools 2.0 is an eclectic set of drawing tools and interface enhancements that also work with Macromedia FreeHand 7; Hot Door's CADtools 1.0 and Vertigo Technology's Vertigo 3D Words 1.0 are more functionally focused, offering drafting tools and 3-D text capabilities, respectively.

What's the Vector, Victor?

The successor to Extensis's DrawTools (see *Reviews*, February 1996), VectorTools consists of 11 plug-ins for Illustrator and FreeHand. VectorNavigator, VectorLibrary, VectorColor, VectorShape, VectorMagicWand, VectorTips, and VectorFrame (which applies frames to selected objects) work in either program; the VectorObjectStyles and VectorBars (user-definable tool bars and palettes) plug-ins are just for Illustrator, while VectorTypeStyles and VectorCaps (a global case-setting utility) work only with FreeHand. This smart approach addresses the individual needs of both programs without introducing redundancy.

Like Adobe Photoshop's Navigator, VectorNavigator displays a small window showing your location and can transport you across a large document with a single click. I experienced some cursor-flickering over VectorNavigator's window, but otherwise it worked fine. VectorLibrary gives you the convenience of drag-and-drop object libraries; you can scroll through them by name or by thumbnail, keeping frequently used elements or image subassemblies close at hand.

VectorColor's context-sensitive palette lets you edit colors by adjusting individual CMYK values, convert images to gray scale, randomly substitute image colors, produce multitone, and adjust brightness and contrast. VectorShape produces 3-D effects by projecting art objects onto shapes (such as spheres and cones) or an editable free-projection mesh. It, too, is now a floating palette in Illustrator, making the plug-in's interface consistent in both programs.

The star of VectorTools is VectorMagicWand. Like paint-style wands, it selects all paths (objects) that resemble a selected path using any combination of fill color, stroke or weight, and object area. You can define tolerances for each criterion, but you can't set separate tolerances for individual CMYK values; neither can you simply define criteria and select paths.

Specialized Tools

Vertigo 3D Words lets you create 3-D text objects inside Illustrator. Text objects appear in the floating palette's 3-D work area, where you use camera controls to fine-tune the text's appearance—click on Apply, and the text objects are transformed into editable 2-D objects. 3D



Color Correction Adjusting curves on VectorColor's graph turns the cheerleader's gray sweater blue.

Words automatically arranges the letters along a path; you can adjust their tracking, as well as the group's orientation in 3-D space. And it comes with 31 preset paths, including one that creates a unique 3-D path every time you apply it.

Unfortunately, text objects can't be beveled; you can't adjust letterspacing individually along the path, draw a specific path, or edit the presets; and object-positioning controls are unwieldy and a bit confusing. 3D Words also produces only simple colored text and offers a single uneditable light source—it doesn't apply the textures or render the lighting effects possible with 3-D modelers or text-object generators. Still, for simple chores, 3D Words does a nice job.

CADtools adds 33 drafting tools to Illustrator's tool palette. It can't replace a drafting program—for example, you

wouldn't want to draw construction plans with it—but for technical illustrations or informational graphics, it's a terrific addition to Illustrator. Drawing tools are added to existing tool pop-ups, while 14 dimensioning options (such as angle, arc length, and Bézier curvature) are appended as new pop-ups.

Included are drafting staples such as filleting and chamfering tools, eight labeling options, a tool for drawing walls and another for quickly healing the intersection of walls, and a Trim tool that's sharper than Illustrator's Scissors. But CADtools' utility isn't limited to drafting—it's sure to find fans among artists as well, though it could use a palette for changing tool attributes (such as stroke width or fillet-tool parameters) on the fly.

Macworld's Buying Advice

Of the three collections, VectorTools is the most universally useful in day-to-day graphic-arts applications, and it works with FreeHand as well as Illustrator. However, artists who rely on Illustrator will find that CADtools' cleanly integrated drafting tools are a valuable addition to their general-use tool sets. And 3D Words, despite its limitations, offers a convenient way to incorporate 3-D text objects into 2-D art.—CARLOS DOMINGO MARTINEZ

CADtools 1.0

RATING: ★★★★★/7.1 **PROS:** Makes drafting and dimensioning tools readily available within Illustrator. **CONS:** Adjusting tool settings is inconvenient. **COMPANY:** Hot Door (562/438-0377, www.hotdoor.com). **LIST PRICE:** \$129.

VectorTools 2.0

RATING: ★★★★★/7.7 **PROS:** Good mix of useful tools and interface enhancements; excellent MagicWand tool. **CONS:** MagicWand can't define individual CMYK tolerances. **COMPANY:** Extensis (503/274-2020, www.extensis.com). **COMPANY'S ESTIMATED PRICE:** \$99.95.

Vertigo 3D Words 1.0

RATING: ★★★/6.6 **PROS:** Convenient creation of 3-D text objects. **CONS:** No object beveling; limited rendering. **COMPANY:** Vertigo Technology (604/684-2113, www.vertigo3d.com). **LIST PRICE:** \$119.

Build a Civilization to Stand the Test of Time



Computer Gaming World

"Simply the Best"

Strategy Plus

The Most
Popular Strategy
Game Ever!

Available Now!

SID MEIER'S

CIVILIZATION II

THE ULTIMATE VERSION OF THE BEST-SELLING STRATEGY GAME

Make every critical social, economic and political decision as you build an empire to span history. Compete against and defeat some of the greatest leaders of all time. Encounter historical tribes like the Celts, Japanese, Vikings and Sioux. Create Wonders of the World like Leonardo da Vinci's Workshop and Sun Tzu's War Academy. It's strategy. It's discovery. It's your destiny.

So plan your every move carefully. Because in this game, you either stand the test of time or you're history.

Created by

MICRO PROSE

Available at most

Babbage's  software 

Call your local store for availability

System Requirements: Any 68030 or higher Macintosh with at least 8MB RAM, color monitor and CD-ROM drive. Also accelerated for Power Macintosh.

MacSoft[®]

2300 Berkshire Lane No., Plymouth, MN 55441 • 612-509-7600
Call for a free catalog or visit our website at www.wizworks.com

Circle 31 on reader service card

©1996, 1997 MicroProse Software, Inc. and WizardWorks Group, Inc. Sid Meier's Civilization is a registered trademark of MicroProse Software, Inc.

Finally!



An all-in-one E-mail solution

QuickMail Office is the best cross-platform E-mail solution for businesses running Mac™ OS, Windows NT® and Windows® 95. Everything you need to set up your E-mail solution—client and server—is here in one box. With QuickMail Office, you can communicate

simply and efficiently whether it's a world away via the Internet or simply across the hall. Best of all, you get full support from a company with 10 years of E-mail experience. Try QuickMail Office for **FREE!** Download it from our Web site at **www.cesoft.com**. Better yet, call **800-579-1150**

or E-mail sales@cesoft.com. Reference code QM02210.

Don't just take our word for it. Here's what users are saying about it:

"... QuickMail gives us the speed, ease-of-use and reliability we have been desperately searching for."

Brian Schraff
President
The Schraff Group

"... far easier to configure and maintain than any other Internet-standard mail ... I hope this sets some standards for other mail ... to come."

Deepak D. Mehta
Managing Director
Global Systems Europe



©1997 CE Software, Inc. CE Software, the CE Software logo and QuickMail are trademarks of CE Software, Inc. All other brand or product names are trademarks or registered trademarks of their respective holders.

Web Color Tools

DITHERBOX, HVS COLORGIF KEEP
ONLINE IMAGES SLIM

THE WEB IS NO PLACE FOR HIGH-resolution, multimegabyte files; Web designers have to think small by reducing the number of colors in their online images. A pair of new utilities—RDG Tools' DitherBox 1.0 and Digital Frontiers' HVS ColorGIF 2.0—help artists pack high-quality images into minuscule spaces.

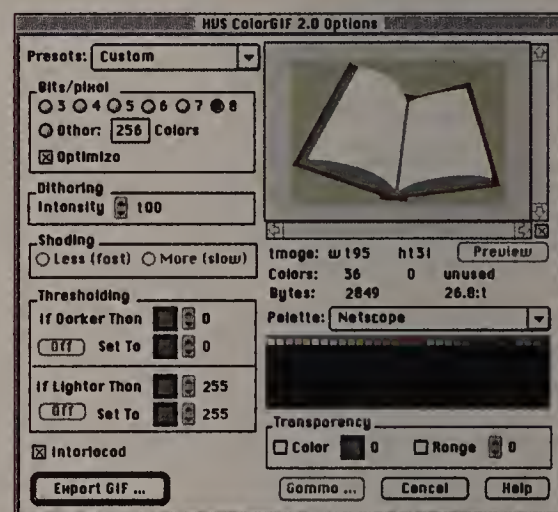
DitherBox, an Adobe Photoshop plug-in, takes the unusual approach of expanding your color palette by patterning sets of pixels to create new perceived colors, expanding the usual Web-safe palette of 216 colors to a potential cast of thousands. To create a dark-cream background for your Web page, for example, DitherBox would pair a brown pixel with a light-yellow pixel to create a hybrid color that, when viewed at normal resolutions, approximates your chosen shade. Because the pattern is composed of Web-safe colors, it won't suffer from dithering. Savvy Webmasters have employed a similar technique of creating color grids by hand; DitherBox automates this often-tedious process.

Clicking on the RGB-color square in DitherBox's interface window brings up Photoshop's standard color picker; choose the color you want, click on the conversion arrow, and DitherBox creates the closest approximation of the RGB value. To match colors by hand, you choose colors from the Web-safe palette and place them on the center grid. DitherBox then adds the hybrid colors to a collection that can be named and saved.

Digital Frontiers' HVS ColorGIF 2.0—a Photoshop filter and export module—employs the company's HVS Color technology to compress information based on how the eye views color. The results can be amazing—when I exported a test image using Adobe's GIF89a Export plug-in, it consumed more than 4600 bytes of disk space; the same image run through HVS ColorGIF weighed in at only 1992 bytes.

Unfortunately, ColorGIF's power comes cloaked in a somewhat confusing and button-laden interface, especially when compared with the slick appearance of BoxTop Software's PhotoGIF (see the feature "Make Your Web Graphics Take

Reviews



Different Paths to Smaller GIFs By patterning sets of Web-safe colors, DitherBox (top) lets you create thousands of dither-proof hybrid colors. HVS ColorGIF 2.0 (bottom) offers superb color compression, but its button-laden interface can be confusing.

Off," May 1997) or Pantone's ColorWeb (see *Reviews*, May 1997).

Macworld's Buying Advice

By automating a clever Webmaster's tip, DitherBox 1.0 lets you use thousands of color variations safely on the Web. HVS ColorGIF 2.0 offers significant power, but figuring out how to harness its strength can be difficult, especially when compared with competing products' ease of use.—JEFF CARLSON

DitherBox 1.0

RATING: ★★★★★/8.6 **PROS:** Automates color grid, making for quick creation of thousands of Web-safe color combinations. **CONS:** Can't "paint" with hybrid colors, can only fill selections. **COMPANY:** RDG Tools (650/344-2505, www.ditherbox.com). **LIST PRICE:** \$29.95.

HVS ColorGIF 2.0

RATING: ★★★/6.6 **PROS:** Excellent compression. **CONS:** Confusing, button-laden interface. **COMPANY:** Digital Frontiers (847/328-0880, www.digfrontiers.com). **LIST PRICE:** \$99.

Created on a
Macintosh with 64MB
of Kingston memory.

Created on a
Macintosh with 8MB
of Kingston memory.

Created on a
Macintosh with 128MB
of Kingston memory.

THESE DAYS,
IT TAKES A LOT MORE
MEMORY
TO BE YOUR
BEST.



MANY OF THE MASTERPIECES created on a Macintosh have one very powerful ingredient in common: Kingston memory. As software becomes more and more complex, memory demands go up. Of course, it's not only the amount of memory that matters, it's the quality. Nobody understands that better than Kingston. We test 100% of our modules. In fact, we test every cell on every chip on every module. On a 16 megabyte module, that's 128 million cells. Only the modules that survive get the Kingston name. That's why we're an Authorized Apple RAM Developer and committed to selling the highest quality Macintosh memory. After all, your best work is a showcase for our best work. To find Kingston memory that was made specifically for your Macintosh, just call (800) 259-8965.

www.kingston.com/ad

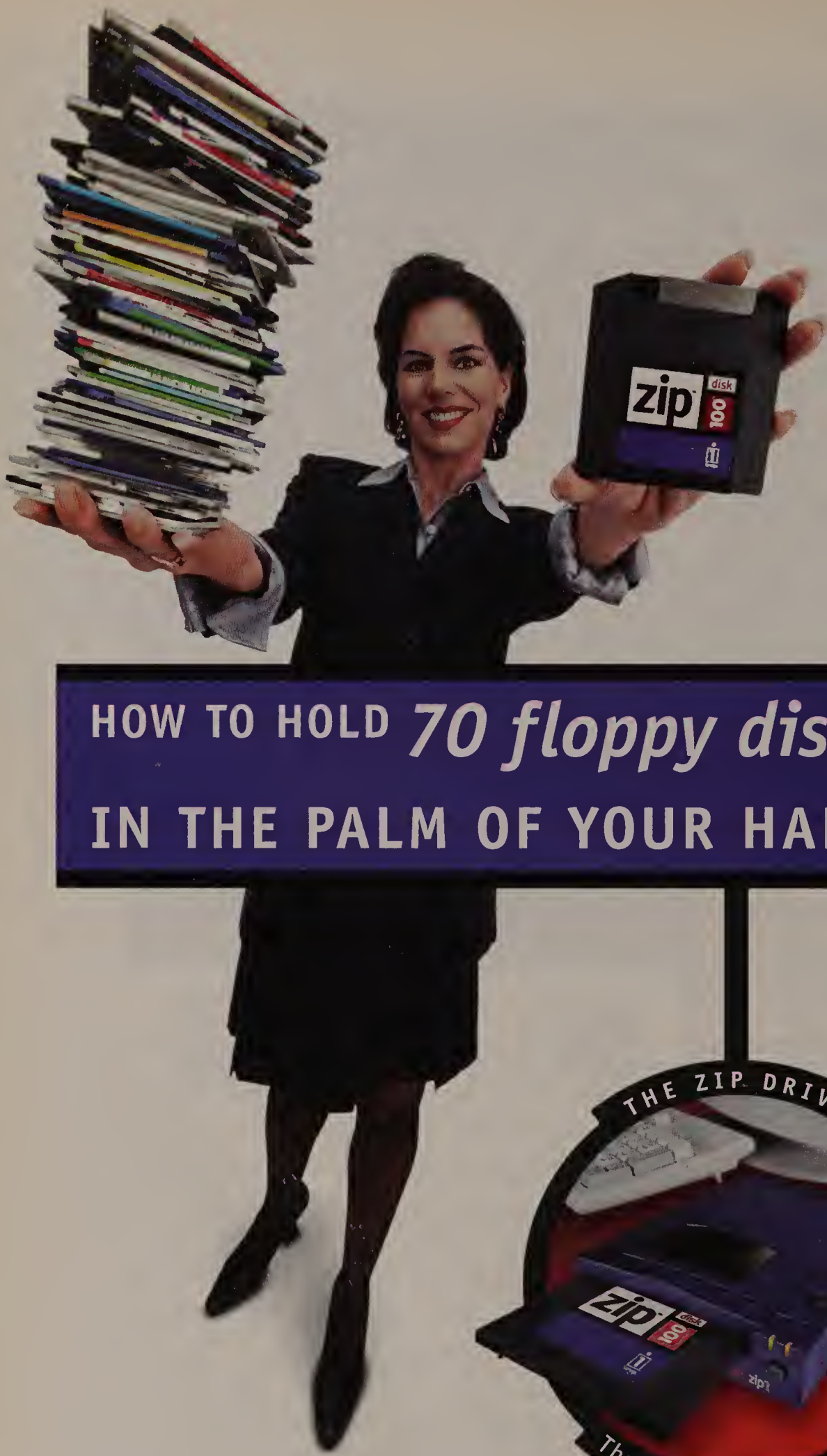


Kingston
TECHNOLOGY
COMPUTING WITHOUT LIMITS™



Kingston Technology Company, 17600 Newhope Street, Fountain Valley, CA 92708, USA, (714) 435-2600, Fax (714) 435-2699 © 1997 Kingston Technology Company. All rights reserved. Computing Without Limits is a trademark of Kingston Technology Company. All other trademarks and registered trademarks are the property of their respective owners.

Circle 201 on reader service card



HOW TO HOLD *70 floppy disks*
IN THE PALM OF YOUR HAND.



NEW, LOWER PRICE.

Visit your local retail store
or corporate reseller,
or you can even see us at:
www.iomega.com



TONS OF STORAGE SPACE.

Increase your storage space —
100MB at a time for as low as
\$12.95 per disk after rebate.

Perfect for storing
and running your whole office.



COMPLETE PORTABILITY.

The Zip™ drive and Zip disks are
small, lightweight, and rugged.
Which means you can take work
home, on the road, or anywhere
else you need to go.



FAST, EASY BACKUP.

Hooks up fast to your PC or Mac.
And, at up to 20 times faster than
that old floppy drive, it's great
for making copies of everything.
So the next time your computer
spazzes out, you won't.

OVER FIVE MILLION OUT THERE. Forget about that old floppy drive. Zip drives are everywhere; at home, in schools, and at the office. In fact, they're the perfect complement to the enhanced audio and visual capability of today's MMX™ technology-based systems. And with so many Zip drives out there, it's more than just compatible, it's universal.

BECAUSE IT'S YOUR STUFF.



©1997 Iomega Corporation. Iomega and the Iomega logo are registered trademarks, and Zip and "Because It's Your Stuff" are trademarks of Iomega Corporation. MMX is a trademark of Intel Corporation. All other trademarks are the property of their respective holders. Prices listed are estimated street prices. Actual prices may vary. Zip is compatible with Windows® 95, 3.1, NT, DOS, OS/2, and Mac OS. Up to 20 times faster using the SCSI or IDE models, up to 5 times faster using the parallel port model.

BeyondPress 3.0

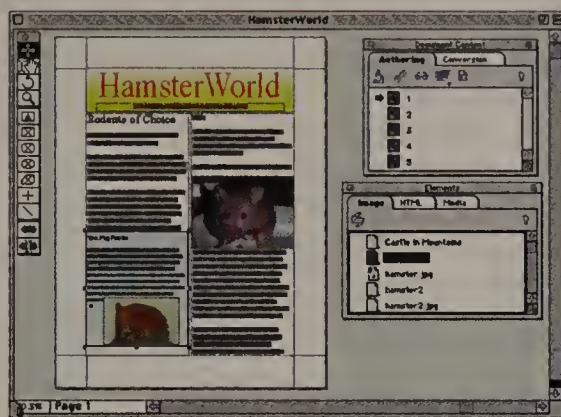
QUARK-TO-WEB XTENSION OFFERS LIMITED WYSIWYG WEB AUTHORING

BEYONDPRESS, THE TOOL OF choice for converting QuarkXPress documents into Web pages, gets a more refined interface, better HTML formatting options, and multimedia support in version 3.0. But the big news is that this plug-in now does more than convert *existing* QuarkXPress pages into HTML documents; it lets you create Web pages from scratch within QuarkXPress. The new version's document-conversion tools remain top-notch; however, the authoring features are limited and can yield somewhat unpredictable results.

BeyondPress 3.0 operates in two modes. In Document Conversion Mode, the program works as in previous versions: you selectively add text chains and graphic elements from your QuarkXPress document to the Document Content palette, which BeyondPress adds to the QuarkXPress interface. You can then drag those elements into any order, apply HTML style tags, and create links to other locations within the document or to other URLs. You can also drop in additional HTML elements before exporting the palette's contents as an HTML document. A helpful new Export Progress Palette shows the approximate file size and download time, as well as any problems BeyondPress encountered while exporting the file.

In the new Authoring mode, you don't pull out individual picture boxes and text boxes for conversion; instead, each page of your QuarkXPress document becomes one Web page. You use QuarkXPress's built-in typographic and page-layout tools to create a Web page, placing each picture and text box exactly where you want it to appear. When you export the page, BeyondPress grabs everything on it and uses HTML tables to create a Web page that closely resembles the one you designed in QuarkXPress.

While the idea of using QuarkXPress as a WYSIWYG Web authoring environment is appealing, this system has its flaws. For example, BeyondPress does an impressive job of approximating the original page layout, but it pulls this off by spitting out bloated HTML containing elaborate, hard-to-edit table grids. Table



Author, Author! BeyondPress 3.0's Elements palette stores images, multimedia files, and chunks of HTML that you can drag and drop onto Web pages, while the Document Content palette lets you switch between Conversion and Authoring modes.

creation in QuarkXPress is a painstaking, laborious task that involves setting up properly spaced tabs; some elements don't convert properly; and overlapping picture and text boxes produce unpredictable results when exported.

But Astrobyte has done a good job of updating BeyondPress to keep up with current Web technologies. A new Elements palette lets you add live media—such as QuickTime movies, Java applets, and Shockwave animations—simply by

dragging them onto a QuarkXPress page. Version 3.0 also supports the HTML tag, cascading style sheets, and Bitstream's TrueDoc technology, which preserves the fonts used in your Web pages. Of course, some of these technologies are of limited value to Web authors because only certain browsers support them; TrueDoc, for example, requires Netscape Navigator 4.0.

Macworld's Buying Advice

Improved though it is, BeyondPress 3.0 can't match a dedicated WYSIWYG authoring program for creating new Web pages. When it comes to extracting content from existing QuarkXPress documents, however, BeyondPress remains the best tool for the job.—JOSEPH SCHORR

RATING: ★★★★★/7.6 **PROS:** Strong HTML formatting options; lets you create Web pages within QuarkXPress; supports a variety of media formats. **CONS:** Generates needlessly complex HTML; can't convert some QuarkXPress elements properly; expensive. **COMPANY:** Astrobyte (303/861-4861, www.astrobyte.com). **LIST PRICE:** \$495.

© 1997 Iomega Corporation.

(VCR for the Internet)

Iomega 100MB Zip™ disks give you the capacity to interact more.
Learn more about Iomega Zip drives and disks at: www.iomega.com/ZipIdeas

VivoActive Producer 2.0

SIMPLE UTILITY BRINGS STREAMING VIDEO TO SMALLER SITES

VIDEO CLIPS CAN ADD A NEW dimension to a Web site, but visitors can grow old waiting for huge clips to download. Streaming video clips, on the other hand, play as they download, and playback begins almost immediately. One tool for creating low-bandwidth streaming video and audio is Vivo Software's VivoActive Producer 2.0, a Power Mac-only utility that compresses QuickTime movies into VivoActive format. It's easy to use, the resulting clips play back smoothly, and—unlike most other streaming video formats—VivoActive doesn't require that you buy a specialized server to dish out your video clips.

VivoActive Producer is a cinch to use: simply select the QuickTime movie you want to convert, specify the target delivery speed, and click on a button to generate the clip. You can select from 21 presets offering various combinations of data-transmission speeds and quality settings. VivoActive Producer also lets you batch-compress a series of movies and create multiple versions of a movie, each designed for a specific delivery speed. The sound and video quality

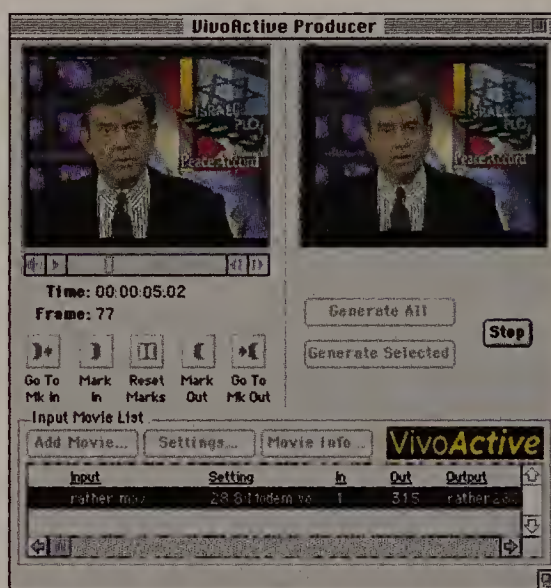
is surprisingly good, even at modem speeds.

Adding VivoActive clips to your Web pages is a simple matter of using the HTML `<embed>` tag along with a few attributes. (The excellent manual contains some examples to get you started.) To play the clips, your site's visitors must download and install

the free VivoActive Player plug-in.

VivoActive's biggest competitor is Progressive Networks' RealVideo (206/447-0567, www.real.com). Progressive gives its RealVideo encoder away and throws in an Adobe Premiere export module that lets you make RealVideo clips directly within Premiere and create video slide shows—something VivoActive Producer can't do. And the latest versions of the RealVideo encoder allow for HTTP streaming, although you still need a RealMedia server—starting at \$1000—for reliable results.

Macworld's Buying Advice Ultimately, RealVideo remains a better choice for high-end streaming video. It provides a broader array of production options, and the RealMedia servers offer more reliable streaming in high-volume situations. But if your site is relatively small (or on an intranet) and you simply want to deliver streaming versions of your QuickTime clips, VivoActive Producer is an excellent alternative.—JIM HEID



Rather Easy As it compresses a clip, VivoActive Producer displays before-and-after views.

RATING: ★★★★★/7.8 **PROS:** Easy to use; excellent audio and video quality; good documentation. **CONS:** Fewer controls than RealVideo; expensive. **COMPANY:** Vivo Software (617/899-8900, www.vivo.com). **LIST PRICE:** \$695.

WITH RESOLUTION LIKE THIS, THE ONLY DIFFERENCE BETWEEN THESE TWO IMAGES IS THE SIZE.

Introducing the EPSON PowerLite™ 7000 projector with 1024 x 768 resolution.

Finally, a projector that gives you the power to present your ideas anywhere, under any lighting condition, using any kind of computer.

Because only EPSON®, the world leader in portable projectors, gives you SizeWise™ technology. That means you get an amazingly clear presentation that's a dead ringer for your computer screen. Just a whole lot bigger. And at less than 15 pounds, it's as easy to carry as it is to set up and use.

For more information on our award-winning line of projectors and a free video, dial 1-800-442-1977 and ask for Operator 3028. Or visit us at www.epson.com.

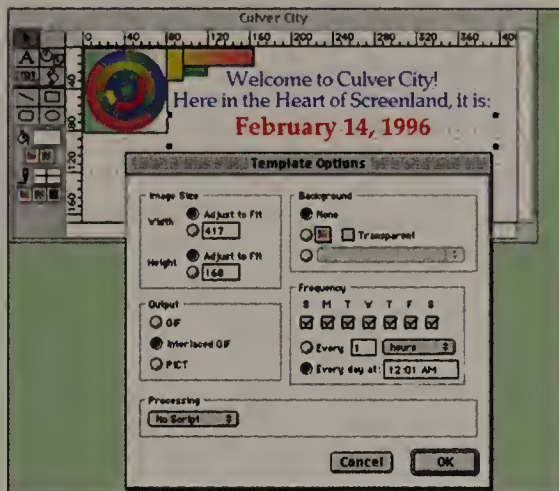


WebCollage

AUTOMATIC WEB INFOGRAPHICS

STOCK TICKERS AND OTHER continuously updating informational graphics are a great way to keep visitors coming back to your Web site, but up till now creating them has been a job for experienced programmers. An innovative new program from StarNine Technologies is a boon to Web designers who want jazzier sites without the expense of custom Java or CGI programming. WebCollage 1.01 makes it easy to produce dynamic infographics that update themselves as often as you like and, once set up, require no further attention.

You create graphic templates in the well-designed WebCollage Editor, which looks at first glance like a familiar drawing program but sports a palette with tools for placing data fields (date and time, information from a URL, or one that runs a script) in the template. Once you've created the fields, the separate WebCollage Assembler fills them in by fetching data from the Internet or any source accessible via AppleScript or UserLand Frontier. The Assembler combines the data with the graphic template, saves it all as a GIF file, and uploads it to



Date Collage WebCollage lets you determine how often your graphics will update. This simple display updates once a day, just after midnight.

your Web server via FTP (or if the Assembler is running on the same machine as your Web server, puts it in the server folder). The Assembler's nicely implemented scheduling features let it refresh the images at any interval you specify.

Using the Editor's tool palette, you can display the current date and time or pull live information from virtually any URL and have it display in your graphic. WebCollage comes with sample templates for NASDAQ stock quotes, weather reports, news displays, countdowns, and other graphics. But the most interesting tool is the one that

triggers scripts (though you needn't be a script maven to use WebCollage effectively; the powerful URL tool may be all you need for most dynamic graphics). You can use the scripting tool to grab data from Claris FileMaker Pro and build an online catalog that updates automatically whenever a price changes. Or you could write a script that gathers data from a ClarisWorks spreadsheet, graphs the results, and includes the graph in the generated GIF file. But although the scripting function is useful and versatile, assembling via scripts can be slow; for faster image assemblies, you're better off using Frontier instead of AppleScript.

Macworld's Buying Advice WebCollage is a fine addition to a Webmaster's toolbox, but at \$249 it costs more than most Web authoring programs. If the price were low enough to make WebCollage an under-\$100 impulse buy, it would be irresistible. As it is, it may be a luxury that only those with a pressing need for dynamic informational graphics can afford.—TOM NEGRINO

RATING: ★★/6.9 **PROS:** Unique and innovative; easy to use. **CONS:** Pricey; building scripted graphics can be time-consuming. **COMPANY:** StarNine Technologies (510/649-4949, www.starnine.com). **LIST PRICE:** \$249.



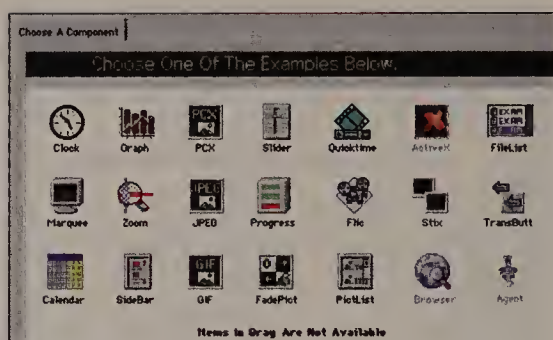
YOU'VE GOT TO SEE IT IN **EPSON** COLOR.

Omnis Studio

NEW WEB TRICKS FOR AN OLD FAVORITE

BLYTH INTRODUCED OMNIS MORE than a decade ago, when relational databases for the Macintosh were rare and cross-platform support was almost nonexistent. The company is now called Omnis Software, and its latest offering—Omnis Studio—combines key components of its Web programming package (Web RAD) with slick new code-organization tools. Not only can you build databases that connect mainframe SQL data to desktop Web browsers, you can produce identical Omnis applications that run on the Mac OS, Windows 95 and NT, and OS/2 (Unix support is expected later this year).

Omnis is organized around collections of objects—Omnis-code class hierarchies, ActiveX components, JavaBeans, and other third-party Web components (see “See Anything You Like?”). If you’re thinking animated banners, sound effects, and other familiar Web-page effluvia, think again; Omnis lets you drag and drop active e-mail addresses and browser-readable tables directly into database forms and offers such Web essentials as TCP/IP sockets, FTP connections, and CGI scripting.



See Anything You Like? To cut development time for Web connection, Omnis Studio lets you drag and drop premade components from many sources.

Another selling point is a revamped scripting language for manipulating objects and controlling event flow. The cross-platform Omnis Script is powerful and accomplishes complex actions with only a few lines of code, although you’re likely to find it somewhat cryptic—for example, `Do Objref.$edgefloat.$assign(kEFposnStatusbar)`—unless you’re already familiar with Omnis conventions and know your way around relational constructs.

Omnis Studio makes it easy to construct the basics of a client-side database-query interface or a server-side relational database; you can check out Omnis’s huge class libraries using the convenient object browser, or visit the Component Store for other usable code. PowerSoft and ACI US

make many of the same cross-platform and rapid-development claims for their products, respectively PowerBuilder 5.0 (see *Reviews*, April 1997) and 4th Dimension 6.0 (see *Reviews*, August 1997), but this Omnis release is by far the fastest way to create Web-oriented enterprise databases. If you are writing an inventory program for your pet store, Claris FileMaker Pro may be a better bet. This point is underscored by the price of Studio and its add-ons: Data Access Manager, with tools for access to Oracle, Informix, Sybase, and Microsoft SQL servers, is \$1299; Production Manager, for development-team version control, is \$799.

Macworld's Buying Advice Omnis Studio is one of the few truly cross-platform tools for the enterprise market, and it gives experienced Omnis Mac developers a fast track both out to the Web and back into corporate SQL data mines. It’s a rapid application development tool that really lives up to that title.—CHARLES SEITER

RATING: ★★★★★/7.2 **PROS:** Elegant object and component design for fast deployment of reusable code. **CONS:** Not for database beginners. **COMPANY:** Omnis Software (415/571-0222, www.omnis-software.com). **LIST PRICE:** \$1599.

New! DiskExpress Pro now accelerated for Power Mac and much more!

DOUBLE YOUR DISK SPEED!

Alsoft DiskExpress Pro



Without optimization, your disk performance slows to a crawl. Basic optimization may restore some of your disk's original performance. Only DiskExpress Pro can double your disk speed by providing faster access to the files you actually use!

DiskExpress Pro 3.0 Norton Speed Disk 3.5

	DiskExpress Pro 3.0	Norton Speed Disk 3.5
Makes your Mac faster than new by monitoring actual file usage?	YES	NO
Groups frequently used files together for optimum speed?	YES	NO
Allows you to schedule or immediately perform a complete optimization of all disks without having to restart your Mac?	YES	NO
Verifies accuracy of both read and write activity to ensure data safety during optimization?	YES	NO
Optimizes the busiest of AppleShare™, File Share™, and Internet/Intranet servers without interrupting productivity or taking the server off-line?	YES	NO

©1997 Alsoft, Inc. P.O. Box 9
of Alsoft, Inc. Other product names

www.AlssoftInc.com

THE ALSOFT COMPANY

ALSOFT

800-ALSOFT1

Circle 140 on reader service card

Professional 3D Power at Your Command!



Ray Dream Studio 5



Previous Awards from Ray Dream Studio 4

© Copyright 1997 MetaCreations Corporation. All rights reserved. Ray Dream Studio is a trademark of MetaCreations Corporation. All other trademarks are the property of their respective holders.

Introducing Ray Dream Studio™5
—The Essential Tool for
3D Design and animation.

These days, every digital artist needs 3D capabilities to compete. Only Ray Dream Studio 5 puts professional 3D power at your fingertips—without the steep learning curve or hefty price tag of other 3D packages.

Shattering popular myths about 3D!

If you think 3D is too difficult, too slow, or too expensive, think again! Ray Dream Studio 5 lets you give any graphic design, illustration, or multimedia project the **stunning impact and realism** of 3D. An intuitive direct-manipulation interface makes it **easy to learn and use**. You get **blazing performance** for maximum productivity, and **seamless compatibility** with your other design tools. All for **less than \$300** off the shelf!



A whole new creative dimension!

Ray Dream Studio 5 has the cutting-edge features to satisfy all of your 3D needs. Sculpt virtually any object you can imagine with the spline-based **Free Form modeler** and the vertex-level **Mesh Form modeler**. Use **physically based animation** with **collision detection** to simulate natural forces like wind and gravity. Set characters in motion with **Inverse Kinematics**. Apply eye-catching **Lens Effects** like lens flare and depth-of-field, and incredible **special effects** like visible lights, explosions, fire, fog, and fountains! And render pixel-perfect images with the legendary Ray Dream ray tracer.



For sales and product information, call
800-846-0111 Dept. TM11
<http://www.metacreations.com>

 **MetaCreations**
The Visual Computing Software Company

Circle 9 on reader service card

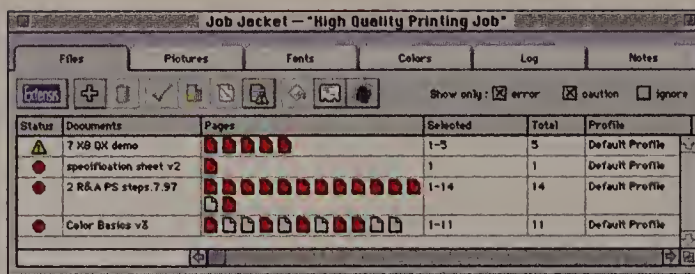
Preflight Pro

BULLETPROOF YOUR QUARKXPRESS FILES BEFORE PRINTING

SAVVY DESIGNERS AND PREPRESS operators know that *preflight*—a process akin to checking airplane instruments before takeoff—can save both time and money when preparing pages for print. Extensis's Preflight Pro is an easy-to-use tool that reports a QuarkXPress document's errors and lets you repair the problems within XPress.

One of Preflight Pro's highlights is a clear, simple interface that uses the printer's "job jacket" metaphor. Simply add one or more documents to the Preflight Pro Job Jacket list, then click on a button to inspect the document. Tabbed palettes in the Job Jacket let you see the status of fonts, images, colors, and so on.

After you inspect the document, Preflight Pro generates a report of problems—fonts that are available or missing, linked or unlinked high-resolution files, and RGB images, for example. You can then review and correct each error within QuarkXPress using Pilot, a Quark XTension. This tool is what makes Preflight Pro unique; other preflight programs, most notably Markzware



Job Jacket Preflight Pro's Job Jacket contains information on critical document components, such as fonts, images, and colors.

Software's \$399 FlightCheck, don't let you access pages and make changes to them within the page-layout application.

To collect the fonts and images for transport, you can place them in a folder, compress them into a self-extracting archive, or create a BinHex file. A convenient Collection Preview dialog box lets you add or remove files before collecting them.

Preflight Pro abounds with handy features, such as customizable profiles that define and save critical parameters for various page specifications and output devices. Three levels of warnings are available to notify the operator and indicate the severity of an error. An Inventory feature lists images, fonts, and colors used in one or more pages, and Job Tickets contain order, delivery, vendor, and transfer-media information as well as any special instructions. The program also offers unique informa-

tion about pictures, such as their location on the disk, creation date, width and height, and clipping-path data. Clear, concise expert tips and problem-solving suggestions are strategically placed throughout the program to guide you through the preflight process. All that's missing is support for Adobe PageMaker, something Extensis

plans to add to the next version (expected to ship later this year). The company is also putting the finishing touches on Preflight Designer, which is limited to inspection and collection tools and will sell for about \$100.

Macworld's Buying Advice Preflight Pro is easy to use and well conceived, providing everything you need to prepare QuarkXPress pages for printing. Anyone who works with XPress files and wants them to print properly should own this tool.—JIM RICH

RATING: ★★★★★/8.4 **PROS:** Easy to use; simple, effective user interface; lets operator make changes directly to QuarkXPress pages. **CONS:** Doesn't work with PageMaker. **COMPANY:** Extensis (503/274-2020, www.extensis.com). **COMPANY'S ESTIMATED PRICE:** \$399.95.

Canvas 5.0.2

TONS OF TOOLS ADD UP TO AN ADEQUATE PACKAGE

AS AN ALL-IN-ONE APPLICATION that tackles painting, illustration, page layout, and presentation, Canvas 5.0.2 seems like a dream come true. In reality, though, this new version of Deneba's venerable graphics package includes a hodgepodge of new features and a huge assortment of clip art and fonts but fails to correct existing problems.

Canvas's main claim to fame has been its ability to mix vector and raster graphics, allowing you to combine line-art drawings and photographic art in the same image. Although Canvas has always made it possible to import and export an incredible number of file formats, version 5.0.2 finally adds GIF89a export, which lets you prepare files for the Web. You now can also manipulate raster images more quickly using Proxies—low-resolution duplicates of image objects that can be modified just like the real thing (see "Something New")—and a new transparency mask feature that lets you make part of a raster layer transparent. As in previous versions, you can create multipage documents with master pages.



Something New Canvas 5.0.2's Proxy feature lets you manipulate raster images more quickly by creating low-resolution duplicates of objects.

Although we've often praised its interface and integrated drawing and painting capabilities, Canvas has traditionally lagged behind Adobe Illustrator and Macromedia FreeHand in terms of high-end features (see "The Illustration Challenge," January 1997). Unfortunately, Canvas 5.0.2 still lacks support for pressure-sensitive strokes in vector objects, doesn't permit a gradient fill to span several objects, and is unable to create distinct path and fill patterns.

Canvas's image handling has other critical shortcomings. Raster objects cannot interact with one another using blend modes, nor can they contain various levels of transparency. The new transparency

mask removes only a hard-edged area around a raster object; you cannot vary the opacity of a layer. Instead, you have to work with raster images in the 24 provided alpha channels—just like in the olden days of Adobe Photoshop (before version 3.0's Layers and Masks), when you had to composite all images within a single layer.

Macworld's Buying Advice Canvas lives in an uncomfortable limbo: its lack of support for high-end features makes it a poor choice for graphics professionals, but its interface is far too complex for newcomers. Canvas could be a suitable choice, however, for an artist on a budget—someone who needs a single program that can produce professional-looking output and who isn't daunted by spending a bit more time getting things done. Canvas 5.0.2 offers a lot for the money, but it lacks the best features and add-ons found in other graphics applications.—SHERRY LONDON

RATING: ★★★/5.9 **PROS:** Excellent assortment of features; generous clip art and fonts; cost-effective. **CONS:** Not as strong as stand-alone packages; key timesaving features missing. **COMPANY:** Deneba Software (305/596-5644, www.deneba.com). **LIST PRICE:** \$599 (free upgrade from 5.0).

PHOTODISC™

A Better Way to Get the Picture®



Now, for a limited time only, \$29 gets you more than 10,000 royalty-free comping images and 20 high-resolution (10MB) images on two CD-ROMs; two companion Resource Books; and the opportunity to see your loved ones at a decent hour. The PhotoDisc Starter Kit: to order call 1 800 528 3472.

TIME.

USAGE FEES.

SAVES

SCANNING.

COLOR CORRECTING.

MONEY.

MARRIAGES.



Starter Kit: \$29 plus shipping until 12/31/97. Regularly \$39.
Source Code: Macworld

Gridz

DELIGHTFULLY BLENDS ACTION, STRATEGY

AS 3-D ACTION GAMES GET ALL the raves, the next revolution in computer gaming is quietly brewing, with developers breaking strategy games free from their each-player-in-turn shackles. So far, real-time strategy leaders Warcraft and Command and Conquer (see *Reviews*, May 1997) flaunt their hard-core wargame ancestry too proudly for casual players. But Gridz, from Green Dragon Productions, combines strategy with real-time action in an inviting, intoxicating blend.

Named for its playing field, Gridz features an expanse of cyberspace territory divided into rectangular blocks. Your objective: to destroy your opponents' home squares before they do the same to you. You act through robot intermediaries to achieve your goals: Builder robots capture territory by activating Nodes that you place at grid junctures, Hacker robots knock down other players' Nodes (thus depriving them of territory), and Striker robots destroy other players' robots.

Building these robots requires energy, which you generate by capturing territory.



40 Megabytes and a Mule A Builder trundles along, expanding your NetSpace territory.

The more NetSpace you own, the faster you generate energy, the faster you can build robots, and the faster you overwhelm and crush your competition. As an added strategic element, some grid squares contain tokens redeemable for more-capable robots at the end of a round.

Aesthetically, Gridz is a treat. The three robot categories (Builder, Hacker, and Striker) include a total of 15 different models, and each variety is painstakingly animated and imbued with a charming personality. Even in the middle of thick and furious action, you'll have no trouble figuring out which is which. Better yet, you'll be responding as much to sonic cues as to visual ones after just a few games.

Gridz proves fun for players at all lev-

els. Early rounds leave you plenty of time to figure out the rules of the road and experiment. Later contests leave you breathless as you battle multiple opponents for control of larger playing fields. And parents should have no qualms about handing Gridz to their kids—there's conflict, but it's good-natured and cartoonish.

In fact, the only thing that's missing is other players. Gridz screams for network play, but the current version allows only one player to battle against the computer. Green Dragon representatives say they're working furiously on a version that allows for up to ten connections. The upgrade—due in October—will be free to registered users.

Macworld's Buying Advice Gridz refines the happy balance between strategy and real-time action found in Warcraft and similar offerings. For folks put off by the aggression of games like Quake and Doom, Gridz offers bite-size chunks of friendly head-to-head action seasoned with just the right amount of brainwork.—CAMERON CROTTY

RATING: ★★★★★/8.8 **PROS:** Lighthearted, real-time strategy game; entertains and challenges. **CONS:** No network play . . . yet. **COMPANY:** Green Dragon Creations (601/473-4225, www.greendragon.com). **LIST PRICE:** \$34.95.

Buy Smart with Star Ratings.

MACWORLD STAR RATINGS

Macworld



Macworld Star Ratings evaluate overall product quality in a quick, easy-to-read format, assigning each product not just a Star Rating, but also a Star Score between 0.0 and 10.0. So even if two products receive the same number of stars, you can compare quality down to the decimal point.

Macworld Star Ratings are the most precise, the most accurate, the most reliable product evaluations out there. And you won't find them anywhere but in Macworld.

Macworld
THE ESSENTIAL MACINTOSH® RESOURCE

Your first round is on us.

Try CSi (CompuServe) yourself, free for 10 hours. Simply complete and return this reply card or call 1-800-462-2672. We'll send your free CSi software and everything you need to get started. We'll even waive your first month's membership fee, which includes access to CSi and the Internet for 10 free hours.

Name _____

Address _____

City, State, ZIP _____

Phone _____



COMPU SERVE.

Get on with it.

Which computing platform do you use (select one)?

☐ Windows 95

☐ Windows 3.x

Do you have a CD-ROM drive? ☐ Yes ☐ No

☐ Power Mac

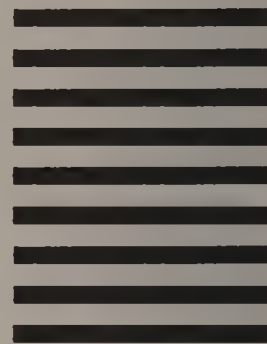
☐ 68k Mac

MRMWO ©1997 CompuServe Incorporated. All rights reserved. CompuServe is a registered trademark of CompuServe Incorporated.

CS-AA323 (10/97)



NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 4650 COLUMBUS, OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUSERVE
PO BOX 182680
COLUMBUS OH 43272-0316





The online service for those who already have a social life.

In the online world, there's a time and place for everything. And when it's time to get things done, there's no better place than CSi (CompuServe). Here, everything is organized with efficiency in mind. Which means you can get to whatever you're after—



COMPUSE[®]VE
Get on with it.

late-breaking news, e-mail, expert advice, or content from the Web—a lot faster, and smarter. So you can get back to the rest of your life a lot sooner. Call us and try CSi yourself. After all, if you're online because you need to be, this is the online service you need.

Call 1-800-462-2672 to get your free CSi software and 10 free hours.

NOTHING
COMES CLOSER
TO REALITY.



RASTEROPS®

	CRT size (viewable)	Dot pitch	Maximum resolution	MSRP
Mc 801 HR	21 inch (20")	.22 mm (h) .16 mm (v)	1600 x 1200 @76 HZ	\$1,999
Mc 801	21 inch (20")	.22 mm (h) .16 mm (v)	1600 x 1200 @71 HZ	\$1,749
Mc 7515	19 inch (18")	.22 mm (h) .14 mm (v)	1600 x 1200 @75 HZ	\$1,149
Mc 6315	17 inch (15.9)	.22 mm (h) .16 mm (v)	1280 x 1024 @78 HZ	\$749
Mc 6215	17 inch (15.9)	.28 mm	1152 x 870 @75 HZ	\$599

If you're looking for the best value in an award-winning, high performance monitor, follow Macworld's lead. Or PC World's. Or a host of others. And check out the new Hitachis.

Our new 19" Mc 7515 is an excellent example. Compared to Sony's 20sell, it's an inch smaller, but the Sony costs 74% more for comparable specs and performance.

So if you want a monitor that your eyes can appreciate as much as your wallet, your choice is simple. Hitachi.
Call for the full story and your nearest retailer.
800 441-4832.



CDW 800 800-4239 Club Mac 800 258-2622 DTP Direct 800 311-7079 Express Direct 800 925-6777 Mac Connection 800 800-2222 Mac Mall 800 222-2808 Mac Market 800 223-4622 Mac Warehouse 800 255-6227 Mac Zona 800 248-0800 PrePress Direct 800 443-6600

HITACHI-NSA, 200 Lowder Brook Drive, Westwood, MA 02090 TEL: 800 441-4832. Faxback: 800 555-8552. www.nsa-hitachi.com

Circle 74 on reader service card

HITACHI

Mac Superguide

MACWORLD SELECTS THE BEST MAC OS SYSTEMS

Edited by Allyson Bates

Looking for a new Macintosh? Confused about what new model to buy? Look no further. Each month, the *Mac Superguide* provides *Macworld's* picks for the best Mac OS systems. Typically we recommend an Editors' Choice winner and two runners-up. Current recommendations, however, may have changed from last month's based on the present lineup and price changes.

You'll also find *Macworld* Star Ratings and Macworld Lab performance benchmarks for all Mac OS systems shipping as we went to press in late August 1997. You may read about other Mac models in *Macworld* and elsewhere, but those are prototypes not yet available—the only systems rated here are those you can actually buy.

For previously reviewed Mac systems, the summaries reference the issue date and page number of the article. In some cases, such as faster versions of existing Macs, there is no full review and thus no cross-reference. New systems are indicated in the benchmark by the ► icon.

Prices from Apple, Motorola, and Umax are company-estimated street prices. APS, DayStar, Power Computing, and PowerTools sell direct. Unless otherwise noted, all pricing includes a keyboard and mouse, but not a monitor or modem.

For price comparisons, estimate spending about \$800 for a 17-inch monitor, \$175 for a modem, \$100 for an extended keyboard, \$50 for a mouse, \$400 for a 2GB hard drive, \$175 for 2MB of VRAM, and \$100 for 16MB of RAM.

OFFICE SYSTEM

EDITORS' CHOICE

★★★/6.5 **PowerCenter Pro 180** This affordable 180MHz Mac is superspeedy and has great features for all tasks, including an upgradable CPU and 3-D circuitry. It's this month's top pick for an office Macintosh, an ideal choice for midrange users. This configuration is upgraded from the base model, but is still

quite affordable. Subtract \$100 for the desktop version. Power Computing (512/388-6868): \$1914, 604e, 32MB RAM, 1MB cache, 4MB VRAM (4MB maximum), 2.0GB hard drive, 16× CD, 2 free drive bays, 3 PCI slots. Aug 97, p. 48

EDITORS' CHOICE

★★★/5.9 **Power Macintosh 7300/200** Apple's 7300/200 is a great buy for any office environment. It's only \$300 more than the less powerful Power Mac 7300/180 and it offers a nice performance boost. It's a strong performer that's competitively priced and easily expandable. Apple Computer (408/996-1010): \$2299, 604e, 32MB RAM, 256K cache, 2MB VRAM (4MB maximum), 2.0GB hard drive, 12× CD, 1 free bay, 3 PCI slots. May 97, p. 100

★★★/5.6 **SuperMac J700/180** Shopping for a new office Mac? Umax's price drops make it an even better purchase. Plus it has one more PCI slot, one more free drive bay, and more cache than the 7300/200. Umax Computer (510/226-6886): \$2099, 604e, 16MB RAM, 512K cache, 2MB VRAM (4MB maximum), 2.1GB hard drive, 8× CD, 2 free drive bays, 4 PCI slots. May 97, p. 100



Not only is Apple's Power Mac 7300/200 affordable, but it's easily expandable too.

PORTABLE SYSTEM

EDITORS' CHOICE

★★★★/7.2 **PowerBook 3400c/240** It's almost twice as fast as a top-of-the-line Pentium portable and costs just a little more. However, the 3400c isn't perfect: it's expensive, it doesn't support multiple monitors, and its CPU isn't upgradable. Apple Computer (408/996-1010): \$5500, 603e, 16MB RAM, 3.0GB hard drive, 12× CD, 12.1-inch active matrix LCD, 1 drive bay, 2 PC Card slots. May 97, p. 50

★★★/6.1 **PowerBook 1400c/133** This midrange notebook has an optional CD-ROM drive and a large active matrix LCD panel. It's more affordable and a better system than the old PowerBook 5300 series. And with a 133MHz CPU, this notebook can literally serve as a desktop replacement. Apple Computer (408/996-1010): \$3000, 603e, 16MB RAM, 1.3MB hard drive, optional 8× CD, 11.3-inch active matrix LCD, 1 drive bay, 2 PC Card slots (\$2500 model 1400cs/133 has passive matrix LCD and 1.0GB hard drive). Jan 97, p. 58

★★★/5.8 **PowerBook 2400c/180** Apple's new 4.3-lb. subnotebook is no heavyweight, but it holds its own. If you can live with the keyboard's shortcomings, you will love the 2400c. A slim AC adapter and tiny external floppy drive make it light as a feather for travelers. \$3500 isn't cheap, and you'll need to add at least a 32MB RAM card, but it's unquestionably a great Mac. Apple Computer (408/996-1010): \$3500, 603e, 16MB RAM, 256K cache, 1.3GB hard drive, 10.4-inch active matrix LCD, no bays, 2 PC Card slots. Nov 97, p. 50

SMALL-OFFICE/HOME-OFFICE SYSTEM

EDITORS' CHOICE

★★★/6.7 **StarMax 5000/300 MT** Motorola recently discontinued its Star-



The StarMax 5000 line added new CPU speeds—but the 300MHz is still our SOHO choice.

Max 3000 and 4000 lines. Now the great performance and features of the 5000/300 are offered in other speeds and configurations. This 300MHz Mac is still an Editors' Choice for home and small office use. Motorola pumps top speed and features into an affordable computer. Its speed ties that of many 604e-based computers, and its Iomega Zip drive, 4GB hard drive, and 16X CD-ROM drive complement the nice feature set. Consultants and small businesses will enjoy this feature-rich tower. Motorola Computer Group (800/759-1107): \$2899, 603e, 32MB RAM, 512K cache, 4MB VRAM (8MB maximum), 4.3GB hard drive, 16× CD, 3 free drive bays, 5 PCI slots, Zip drive. Sep 97, p. 60

EDITORS' CHOICE

★★★/6.5 **PowerBase 240** It's slower than the StarMax 5000 but still has a great price/performance ratio. The 240's pro-level performance, strong feature selection, and greater expandability hold its Editors' Choice title in the SOHO category. Now offering a \$100 rebate. Power Computing (512/388-6868): \$1599, 603e, 16MB RAM, 256K cache, 2MB VRAM (4MB maximum), 2.0GB hard drive, 8× CD, 3 free drive bays, 3 PCI slots. May 97, p. 100 *continues*

REAL PRODUCTS REAL RATINGS

Reviews you can trust: Unlike other publications, Macworld rates only final shipping products, not prototypes. What we review is what you can actually buy.
Outstanding ★★★★★ = 9.0–10.0 Very Good ★★★★ = 7.0–8.9 Good ★★★ = 5.0–6.9 Flawed ★★ = 3.0–4.9 Unacceptable ★ = 0–2.9

★★★/6.2 **SuperMac C600x/280**
With 1MB of in-line cache, the C600x moves into the top class of 603e performers. Since Umax shaved some dollars off the price, the C600x/280 is an even better buy. This is one of the first 603e Macs with an upgradable CPU, but users will want more VRAM and PCI slots. Umax Computer (510/226-6886): \$2395, 603e, 32MB RAM, 1MB cache, 2MB VRAM (2MB maximum), 4GB hard drive, 12× CD, 4 free bays, 1 free PCI slot. Oct 97, p. 48

★★★/6.1 **Power Macintosh 6500/225**
This decent SOHO alternative has cool features—even a Zip drive. But the 225 is hardly upgradable. Recent price cuts make this Mac even more affordable for



The versatile PowerTower Pro 225 works wonders as a publishing or graphics Mac.

the home or small business user. Apple Computer (408/996-1010): \$1799, 603e, 32MB RAM, 256K cache, 1MB VRAM (1MB maximum), 3.5GB drive, 12× CD, no free drive bays, 2 PCI slots, 33.6-Kbps modem. Aug 97, p. 52

EDUCATION SYSTEM

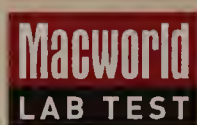
EDITORS' CHOICE

★★★/6.7 **Power Macintosh 5500/225**
It's a shame that this all-in-one Mac is available only to schools. The 5500/225 boosts performance in the education market by offering rich features and a fast CPU at a reasonable price. Same case, convenience, and price as the old 5400's, but with more power and 3-D capabilities.

Apple Computer (408/996-1010): \$1999 (only sold to schools), 603e, 16MB RAM, 256K cache, 2MB VRAM (2MB maximum), 2.0GB hard drive, 12× CD, no free drive bays, no PCI slots; Ethernet card, internal stereo speakers, monitor included. Aug 97, p. 52

EDITORS' CHOICE

★★★/5.9 **PowerBase 200** It's fast, cheap, and expandable, with 3-D video acceleration. This 200MHz Macintosh is Power Computing's base processor speed for the PowerBase line. A great buy for cash-strapped schools and students. Take off \$100 if you buy this summer. Power Computing (512/388-6868): \$1399, 603e, continues



Every Shipping Mac Tested and Rated

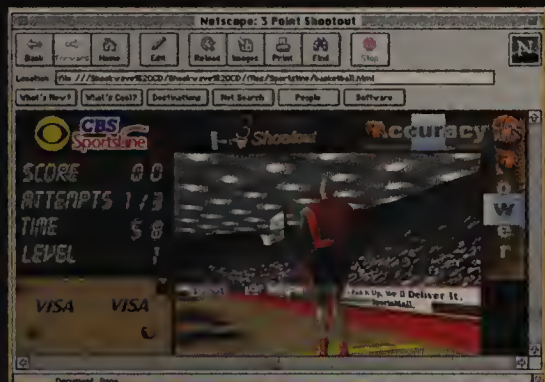
To help you make the right buying decision, Macworld re-rated all shipping Macs according to our new SpeedMark and categorized systems in Professional, Consumer, and Portable categories. New scores have been adjusted proportionally to reflect anticipated technological developments for the following year. Longer bars are better. Core results are times as fast as an Apple Power Macintosh 7100 (7100 = 1.0). Only shipping systems are tested and rated.

Longer bars are better. Editors' Choice winners' names are in red. ▶ New. An Apple Power Macintosh 7100/80 has a SpeedMark score of 1.0.

	SpeedMark	Star Rating*
Professional Category		
Apple Computer		
Power Macintosh 7300/180	2.4	★★★/5.8
Power Macintosh 7300/200	2.6	★★★/5.9
Power Macintosh 8600/200	2.7	★★★/6.5
Power Macintosh 9600/200	3.1	★★★/6.7
Power Macintosh 9600/200MP	2.9	★★★/6.2
Power Macintosh 9600/233	3.3	★★★/6.6
APS Technologies		
MPower 604e200	2.6	★★★/5.9
DayStar Digital		
Genesis MP 800+	3.1	★★★/6.0
Genesis MP 900+	3.2	★★★/5.7
▶ Genesis MP 932+	3.4	★★★/5.9
Power Computing		
PowerCenter Pro 180	2.9	★★★/6.5
PowerCenter Pro 210	3.2	★★★/6.4
PowerTower Pro 225	3.4	★★★/6.4
PowerTowerPro 250	3.6	★★★/6.2
PowerTools		
Infiniti 4200GT Smart	2.7	★★★/6.2
Umax Computer		
SuperMac J700/180	2.7	★★★/5.6
SuperMac S900/200	3.1	★★★/6.6
SuperMac S900/200DP	2.8	★★★/6.1
SuperMac S900/225	3.1	★★★/6.4
SuperMac S900/233	3.2	★★★/6.5
SuperMac S900/250	3.5	★★★/6.3
SuperMac S900/250DP	3.3	★★★/6.2
Consumer Category		
Apple Computer		
Power Macintosh 4400/200	1.9	★★★/5.5
Power Macintosh 5500/225**	2.1	★★★/6.7
Power Macintosh 6500/225	2.1	★★★/6.1
Portable Category		
Apple Computer		
PowerBook 1400c/133	1.0	★★★/6.1
▶ PowerBook 2400c/180***	1.6	★★★/5.8
PowerBook 3400c/180	1.7	★★★★/7.0
PowerBook 3400c/200	1.8	★★★★/7.1
PowerBook 3400c/240	2.0	★★★★/7.2

*Based on features, implementation, innovation, performance, reliability, ease of use, and value. (See Star Ratings section for full explanation.) **Available only to educational institutions. ***Configured and tested with Mac OS 8.

show the WORLD... YOUR world



<http://www3.sportsline.com/u/contests/arcade/>
created using Macromedia Director with Shockwave.



<http://reefbound.au.msn.com/main.htm>
created using Macromedia Flash with Shockwave.

Multimedia on the web drives hits, extends visits, encourages returns and helps build your brand. That's what it's all about.

CBS Sportsline used Director 6 to create their addictive, intensely interactive 3-Point Shootout for precisely those reasons. With intuitive drag and drop programming, streaming sound and incomparable features and versatility, Director is the tool of choice for immersive online development.

MSN Australia used Flash 2 to design their Expedition Reefbound site, an interactive experience complete with animation, sound and rollovers. Flash generates extremely small files and streams them over the web for an immediate on-line experience. All without programming.

Show the world... your world.

Do it with Macromedia Director and Flash.



Check out <http://special.macromedia.com/fdmw>
or call 800 945-7037 ext. mw

Circle 37 on reader service card


macromedia®

16MB RAM, 256K cache, 2MB VRAM (4MB maximum), 2.0GB hard drive, 8x CD, 3 free drive bays, 3 PCI slots. May 97, p. 100

IMAGE-EDITING AND 3-D GRAPHICS SYSTEM

EDITORS' CHOICE

★★★/6.4 **PowerTower Pro 225** This expandable tower is ideal for all-around image editing. A multiprocessor-based Mac is faster for some key operations, but the 225 is faster and cheaper. Plus Power Computing's summer sale offers 128MB of RAM for a bargain price. Power Computing (512/388-6868): \$3594, 604e, 32MB RAM, 1MB cache, 8MB VRAM (8MB maximum), 2.0GB hard drive, 16x CD, 6 free drive bays, 6 PCI slots. Jun 97, p. 108

EDITORS' CHOICE

★★★/6.0 **Genesis MP 800+** The ultimate Mac system is an Editors' Choice for image editing and 3-D graphics. It speeds through programs such as Adobe Photoshop and leaves plenty of room for upgrades. DayStar Digital (770/967-2077): \$4999, 604e, 32MB RAM, 512K cache, 4MB VRAM (4MB maximum), 2.0GB hard drive, 16x CD, 7 free drive bays, 6 PCI slots. Jun 97, p. 108

PUBLISHING AND DESIGN SYSTEM

EDITORS' CHOICE

★★★/6.4 **PowerCenter Pro 210** Power Computing is redefining affordable with the PowerCenter Pro 210. Recent price cuts make this Mac an even better deal. It costs less than high-end Macs with similar specifications, but it's a bit slower. Order this summer, you get 64MB of RAM free. Power Computing (512/388-6868): \$2344, 604e, 32MB RAM, 1MB cache, 4MB VRAM (4MB maximum), 2.0GB hard drive, 16x CD, 2 free drive bays, 3 PCI slots. Aug 97, p. 48

EDITORS' CHOICE

★★★/6.4 **PowerTower Pro 225** The low price, high overall performance, and plush feature set make this tower a great purchase for publishing pros. And right now it's at a superlow price. Power Computing (512/388-6868): \$3594, 604e, 32MB RAM, 1MB cache, 8MB VRAM (8MB maximum), 2.0GB hard drive, 16x CD, 6 free drive bays, 6 PCI slots. Jun 97, p. 108

★★★/6.4 **SuperMac S900/225** Umax shaved a few bucks off the soon-to-be-discontinued S900/225, making it a bet-



The Genesis MP 800+ is a perfect combination of solid design and great performance.

ter value for publishing and designing professionals. It's nearly as fast as the PowerTower Pro 225, but with fewer free bays. It's still a solid choice if you're shopping for an expandable, fast Macintosh. Keep an eye out for Umax's new S910 line that will soon be replacing the SuperMac S900 series. Umax Computer (510/226-6886): \$3499, 604e, 32MB RAM, 512K cache, 8MB VRAM (8MB maximum), 2.1GB hard drive, 8x CD, 4 free drive bays, 6 PCI slots. Jun 97, p. 108

MULTIMEDIA AND VIDEO-CREATION SYSTEM

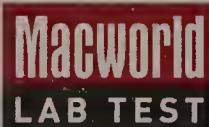
EDITORS' CHOICE

★★★/6.0 **Genesis MP 800+** This expandable Mac speeds through multiprocessor (MP)-enabled programs such as Adobe Premiere. Its four 604e/200MHz CPUs can handle complex video creation, and there's plenty of room for upgrades, with 12 RAM slots and seven drive bays. DayStar Digital (770/967-2077): \$4999, 604e, 32MB RAM, 512K cache, 4MB VRAM (4MB maximum), 2.0GB hard drive, 16x CD, 7 free drive bays, 6 PCI slots. Jun 97, p. 108

★★★/6.5 **Power Macintosh 8600/200** A clever, unique case takes the pain out of upgrading the Power Mac 8600/200. Green-colored handles, levers, and buttons make it easy to get inside the box. Novice video creators will enjoy the cool built-in video, but serious multimedia gurus may be disappointed with the minimal three PCI slots. Apple Computer (408/996-1010): \$2999, 604e, 32MB RAM, 256K cache, 2MB VRAM (4MB maximum), 2.0GB hard drive, 12x CD, 1 free drive bay, Ethernet card, built-in video. Aug 97, p. 50 [m](#)

Buy smart with Macworld Lab.

MACWORLD LAB TEST



To buy smart when you're choosing Mac OS hardware or software, you've got to put it to the test. Macworld Lab is on the job, testing, scrutinizing, and evaluating the performance and quality of the products you need. With real-world testing, we measure performance by real-life standards. Using the system and applications you'd use to complete the tasks you're faced with every day, our experts come up with answers that matter to you.

You can rely on Macworld Lab Test results—We test the products the way you use them.

Macworld
THE ESSENTIAL MACINTOSH® RESOURCE

Use full-color autotracing to grab an image. Make a multi-object blend. Join it to a path.

FreeHand™ 7. More Precision.

Use graphic search and replace to swap images. Drag & drop color. Draw naturally.

More Flexibility.

Then, twist the whole scene to print, multimedia, or out onto the Web with Shockwave™.

More ways to flaunt your brilliance.

New FreeHand 7.0
Extends Your Web
Capabilities

Call
1-800-945-9179

Now

Get a FREE
Demo CD

Our industry leading cross-platform tools make it all possible.

To order or for more info:

1-800-945-9179 • <http://special.macromedia.com/fh>



macromedia

©1997 Macromedia, Inc. All rights reserved. Macromedia, the Macromedia logo, FreeHand, FreeHand Graphics Studio, and Shockwave are trademarks or registered trademarks of Macromedia, Inc.

Circle 38 on reader service card

LACIE

your
trusted
storage
source,
and
now
a lot
more...



MacUser

Best
Buy

MacUser Best Buy, August '97: Diamondtron™

"Its superb image quality will be pleasing to your eyes, whether you're creating an illustration, producing a layout, working in multimedia or crunching numbers in a spreadsheet."

0.28mm dot pitch and a maximum resolution of 1600x1200 pixels at 75Hz, providing superior image detail.

Diamondtron™ Aperture Grille technology maintains 40% greater sharpness for unsurpassed edge to edge focus.

21" tube with 19.7" diagonal viewing area accommodates 2 page spreads for pre-press and design work.

"...since then my main monitor has been a La Cie Electron21, and it's been a joy: the image is bright and rock-steady, and best of all, it does what I want most from a monitor – it just works." **Henry Norr** – **MacWeek, 07.07.97**

28 on-screen image controls, quality optics and anti-glare/anti-static coatings assure consistent image quality.

multiple choices

Powerful multimedia applications and faster processors can put the squeeze on yesterdays' storage and display products. Don't let your computer hold you back.

La Cie makes it easy to expand your system's productivity with a multitude of great products. Our **electron21**

color monitor, 36 bit color **silverscannerIV** and our award-winning **d2** hard drives and CD-Recordables are designed with a wealth of superior features to make them the best in the business.

La Cie, products are engineered to give peak performance as you fit the

Rugged, all-steel case design is shock-resistant for maximum protection of your valuable data.

Award-winning La Cie **d2** hard drives are at the top of their class for high performance in 2GB to 9GB capacities.

Versatile La Cie **d2** Jaz drives offer easy transfers of 1GB files within an office or to outside service bureaus.

La Cie **d2** DAT drives are the value leaders for archiving and the best solution for your backup storage needs.

The choice of designers and pre-press professionals, La Cie **d2** 4X/8X CD-Recorders are great for inexpensive file distribution.

Includes La Cie Storage Utilities with acclaimed Silverlining™ disk management software, a \$99 value... FREE.

Shipped ready for immediate "plug and play" operation as a stand-alone drive or in a space saving stack.



...we
fit the
pieces
together
for
digital
video
multi-
media
pre-press
and
more.

for multimedia

pieces together in your unique configuration. Like you, we are after perfect results. That's what has made us the choice of more than 750,000 users for over a decade.

These great products are available right now in hundreds of

leading computer reseller outlets across the country and in top mail order catalogs. Power up to the challenge of multimedia.

The choice is yours.

The choice is easy. The choice is La Cie.



tel: 503 844-4500
fax: 503 844-4508
www.lacie.com

Bursting

Just What You'd Expect

From XANTÉ

With New Features

Let your imagination explode with XANTÉ's Accel-a-Graphix® CT4 high quality color controller - now packed with more features than ever!

In addition to these new features, XANTÉ includes true Adobe™ PostScript™, tiling up to 50 feet wide, printing on up to four printers at the same time, and much, much more. Print incredibly accurate color documents with XANTÉ's Linearization Tool and Color Rendering Dictionaries (CRDs).

XANTÉ's Accel-a-Graphix CT4 - Your choice for incredible wide format color printing at a truly incredible price.

TRAPPING

FREE CRDs

UP TO 30% FASTER

ADDITIONAL SCREENING OPTIONS

60" SUPPORT

ONLY
\$4,995⁰⁰



Adobe PostScript



For more information on XANTÉ's Accel-a-Graphix CT4, call: 1-800-926-8839 Ext. 2142
Dealers Call Ext. 2143 • Fax: 334-342-3345
www.xante.com

 **XANTÉ**
Innovations in Printing Technology

© 1997 XANTÉ CORPORATION. XANTÉ and Accel-a-Graphix are registered trademarks of XANTÉ CORPORATION. Adobe, PostScript, and the PostScript logo are trademarks of Adobe Systems Incorporated or its subsidiaries and may be registered in certain jurisdictions. Other brands and product names are trademarks or registered trademarks of their respective holders. XANTÉ CORPORATION, 4621 Spring Hill Ave., Mobile, AL 36608, P.O. Box 16526, Mobile, AL 36616-0526 USA, Phone: (334) 342-4840, Fax: (334) 342-3345

DIGITAL IMAGING SUPERGUIDE

DIGITAL CAMERAS, SCANNERS, IMAGE EDITORS, AND COLOR PRINTERS—ALL UNDER \$600—

Macworld
LAB TEST

OFFER TERRIFIC VALUE.

MACWORLD UNCOVERS

YOUR BEST CHOICES.



PAGE
89

Snap It Digital cameras capture hot shots



PAGE
99

Scan It Scanners generate crisp images



PAGE
107

Tweak It Image editors sharpen your best shots



PAGE
115

Print It Color printers deliver vibrant results

We move the information that moves your world.™

adaptec

You were born
CREATIVE,
not patient.

©1997 Adaptec, Inc. All rights reserved. Adaptec, the Adaptec logo and tagline, PowerDomain, and Remus software are trademarks of Adaptec, Inc. and may be registered in some jurisdictions.
*FireWire is a trademark of Apple Computer, Inc. and is used under license. **All other trademarks belong to their respective owners.



Upgrade to Adaptec
PowerDomain Plus with Wide
UltraSCSI and desktop RAID.

Cut the time it takes to open, manipulate, and save Photoshop® files by a third. Yes, a *third*. All you need is Adaptec® PowerDomain™ Plus—a Wide UltraSCSI card capable of pumping 40MB/sec through Photoshop. It comes with our Remus™ desktop RAID software that totally cranks stuff across your hard drives. Adaptec also offers products that help you get digital video into your Mac from your DV camcorder like our 1394 FireWire† adapter. Or burn concepts onto CD with our Toast CD-recording software. Spend less time waiting and more time creating with Adaptec. **For details, visit: www.adaptec.com/macworld**



11 digital cameras under \$600 capture hot shots

by John Goddard

each camera, compared image capacities and download speed, and of course looked closely at image quality.

When you're checking out a new camera, first notice how it feels in your hand—and on your body. Is it portable enough to fit in a fanny pack or slip comfortably into a coat pocket? Toting these cameras around San Francisco, I was put off by the 1-pound metallic bulk of the Konica Q-EZ (www.konica.com). It's the only camera in this bunch that isn't stylishly compact. In contrast, Konica's Q-mini fit nicely into my jacket pocket.

Next examine a camera's controls and indicators, such as those for battery level, picture counting, and exposure compensation. Controls should be arranged logically and let you easily override features such as a self-timer or a flash.

For example, the Agfa ePhoto 307's (www.agfa.com) tiny top-mounted control panel shows how many shots you've taken and how many remain. With two button presses you can easily adjust the exposure and flash level. Compare that with Eastman Kodak's DC20 (www.kodak.com), which has three indicator lights (power, busy, erase) and is otherwise devoid of controls except an Erase button that's precariously close to the Power button.

LCD or Viewfinder?

Generally, digital cameras that cost less than \$400 offer a simple glass viewfinder next to the lens. More expensive models usually have a color LCD screen in the back that, unlike a viewfinder, shows you *exactly* what the lens sees.

The difference between the two can affect the accuracy with which you compose shots, enabling you to avoid surprises such as a wayward thumb. An LCD also lets you review your pictures on the spot without connecting the camera to a Mac, so you can decide immediately whether to save or erase your shot.

The best LCD screens display the scene smoothly as you compose the shot. Of the eight LCD-equipped cameras we tested, the action on screen was most fluid on the Apple QuickTake 200 (www.apple.com), the DS-7 from Fuji Photo Film (www.fujifilm.com), and the Olympus D-200L (www.olympus.com). Swing the camera left, right, up, or down—the motion on screen displays at a smooth and consistent 30 frames per second. In con-

SNAP IT

UNTIL NOW I'd never seriously considered buying a digital camera. The good ones were just too expensive. Earlier this year, decent entry-level digital cameras cost about \$800—roughly as much as a fairly fancy film camera or a high-end camcorder. Now those same cameras—and their successors—are under \$600, while they store more images and pack more features.

I'm still not ready to give up my 35mm camera—digital cameras don't yield those great razor-sharp images—but these sub-\$600 cameras are unbeatable for quickly creating images and getting them into your computer to manipulate and put to use. Suddenly I'm finding all kinds of purposes for digital photos: to enhance my e-mail and my Web page, to document valuables for insurance, to preview choice offerings at a garage sale.

Digital cameras are a rapidly developing category, so consider this roundup a snapshot in time. To give you a view of what's available—as well as a guide to what to look for as digital cameras evolve—Macworld Lab tested 11 digital cameras priced from \$199 to \$599. We examined the overall design and feel of

et

...no digital camera gets it just right. We photographed this still life from the same distance with each camera, using best-quality setting. We scaled the images (shown at 300 dpi) identically; their sizes vary because different cameras capture different amounts of data.

The Olympus D-200L and Agfa ePhoto 307 shoot the sharpest pictures, but the mint-green background and vase in our test still-life appear pale blue. The Apple QuickTake 200, Fuji DS-7, and Konica Q-EZ and Q-mini cameras produce more accurate color output, but higher levels of JPEG compression reduce pixel details and soften the images.

Most digital cameras capture images at a similar resolution. Some cameras use a higher-quality lens and charge-coupled device—the camera's retina—to capture images with more detail than less capable models. For example, the output from the D-200L is sharper than the Q-mini's.

For a real-world comparison, we compared the results with prints that were made from shots taken with a disposable camera and a 35mm film camera, then scanned with the 600-dpi Umax Astra 600S (see the feature "Scan It," in this issue, for more on this and other under-\$500 scanners).



Scanned Image This scanned image (shown for comparison) is a photo taken with a 35mm film camera. The image has a mistakenly blue background, blown-out highlights on the silver bracelet, and blurring from the scanning process.



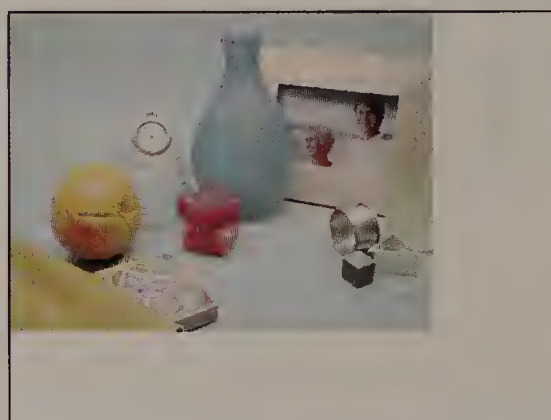
Agfa ePhoto 307 The image detail is surprisingly crisp for a no-frills \$299 camera. Despite blown-out highlights on the watch, and a slight blue shift in the background, the images look very good.



Casio QV-100 The image quality is poor. The shot is underexposed and marred with JPEG artifacts throughout. Reddish tones are missing in the soap bar; the light green background and vase mistakenly appear as bright blue.



Epson PhotoPC 500 Image sharpness is similar to that from the less costly Agfa, which uses many of the same parts, including the lens. Note the slight blue hue to the green vase. Highlights in the clock and silver bracelet are too bright.



Kodak DC25 The distracting violet cast and JPEG artifacts in the framed photo were not visible on the camera's LCD screen. Image quality is poor. This camera supports removable PC Cards for extra storage.



Konica Q-EZ Despite garish warm colors and blurry details, this bulky camera rendered the colors reasonably well. This camera lacks an LCD display.

trast, the Konica Q-mini, the Casio QV-10A and QV-100 (www.casio.com), and the Epson PhotoPC 500 with its optional LCD (www.epson.com) jumped like Neil Armstrong on the moon.

The downside to an LCD is its porcine appetite for batteries and a tendency to become washed-out in very bright sunlight. To compensate for the latter, the QuickTake 200, DS-7,

QV-10A, QV-100, and Q-mini LCDs have brightness controls; however, I had better luck cupping my hand over the screen.

Images look deceptively gorgeous on a tiny LCD. Once you've downloaded the shots to a hard drive, it's easy to spot their blemishes: chunky pixels (artifacts of compression), underexposed shadows, and overexposed highlights. So don't judge

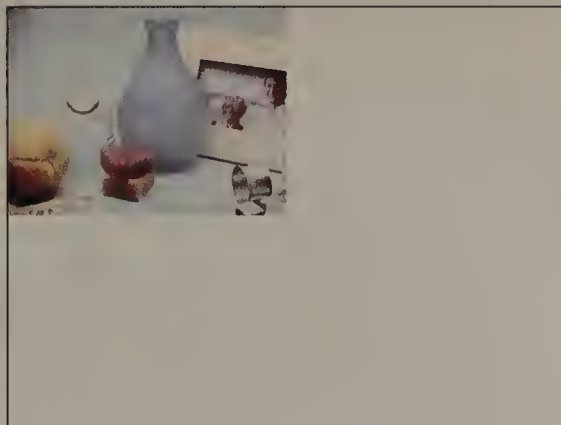
picture quality by what you see on a 1.8-inch LCD. If you're comparing digital cameras in a store, insist on downloading a few pictures to a computer so you can see how images look on a monitor.

Vagaries of the Viewfinder

Viewfinders have two advantages over LCDs: they don't drain batteries, and you can see shots even in bright sunlight. The



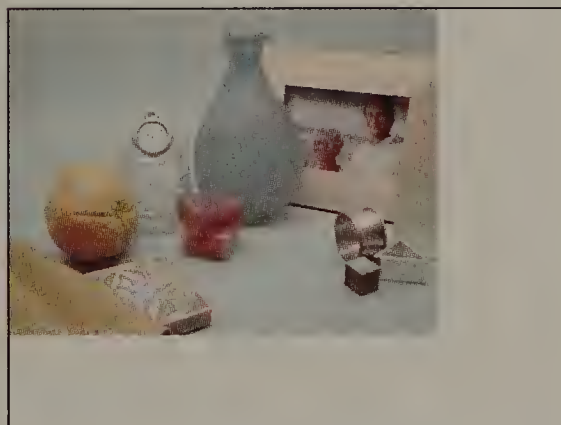
Apple QuickTake 200 The hues in the green background paper and vase are close to accurate. The highlight and shadow areas of the orange are also well exposed. However, you'll need to sharpen shots with the bundled image editor.



Casio QV-10A Among the numerous problems with this shot are JPEG artifacts in the framed photo, missing reds in the soap bar, and stark contrast and low resolution overall.



Fuji DS-7 Nearly identical to the Apple's output, this shot's background and vase colors come closest to what we saw. The overall exposure is very good, but details are blurred. Fuji's download utility also is less intuitive than Apple's.



Kodak DC20 Shots from this tiny camera produce acceptable exposure, but the dull colors and JPEG artifacts in the background are distracting. It has a glass viewfinder rather than an LCD display.



Konica Q-mini Hues are fairly accurate on the vase and green background. Although shots looked great on the pint-size camera's LCD screen, the downloaded shots are disappointingly hazy.



Olympus D-200L Very crisp detail and good exposure of the orange and framed picture offset a slight blue tint to the green background. Too bad you can't upgrade the camera's image capacity.

disadvantage of viewfinders is that since they're set above or off to the side of the lens, they give you a slightly skewed view of what the camera sees. Tightly composed shots may not look exactly as you remember them. For example, I ticked off shots of a batch of daisies with the Q-EZ as close as an inch and a half away, carefully composing each shot in the viewfinder. Because the Q-EZ's viewfinder is

above the lens, I unknowingly cut off the tops of the flowers.

Of the cameras we tested, only three—the ePhoto 307, the Q-EZ, and the DC20—lack an LCD display option, constraining you to compose your shots solely from a glass viewfinder. The QuickTake 200, PhotoPC 500, Kodak DC25, and D-200L all give you the flexibility of having both.

LIGHTING

1 Digital cameras nab the best shots in subdued light. In bright sunlight and under bright artificial light, digital images tend to get washed out in highlight areas. Look for shade or turn your subject's face from the sun. If your subject is against a bright background, set the flash to fill-in or (if possible) increase the exposure one notch.

2 Although many digital cameras lack a flash, they are highly sensitive to infrared light. Most cameras let you adjust the exposure—via buttons or on an LCD panel—so the camera can nab shots in dimly lit settings.

COMPOSITION

3 Compensate for viewfinder shift by framing shots slightly in the opposite direction of the lens. For example, if the lens is to the right of your viewfinder, compose the shot slightly to the left.

4 If the camera has an LCD screen, review the images after a few shots to make sure you're capturing what you want.

5 If shots are going with text on a Web page, compose vertically so they will fit more easily.

6 Digital-camera images have low resolution (72 to 152 pixels per inch), so they are less malleable than high-resolution scans. To get more detail in your shot, move closer to your subject.

EXTRAS

7 Even the best digital images can look just a little bit soft. Use the image editor bundled with the camera to sharpen your favorite shots.

8 Slow downloads? Check the advanced options in the camera's software and make sure the settings are the fastest your Mac supports.

9 Have lots of batteries handy and buy an AC adapter if your camera doesn't come with one.

10 If your camera lets you take close-ups, you can rephotograph your favorite old pictures and e-mail them or post them on a Web page.

Snap Facts: Digital Cameras under \$600 Compared

Company	Agfa	Apple	Casio	Casio	Eastman Kodak	Eastman Kodak
Product	ePhoto 307	QuickTake 200	QV-10A	QV-100	DC20	DC25
Star Rating*	★★★/6.3	★★★★/7.3	★★★★/5.8	★★/3.9	★★/4.6	★★/4.9
Price**	\$299	\$599	\$399	\$599	\$199	\$399
Phone number	201/440-0111	408/996-1010	201/361-5400	201/361-5400	716/724-4000	716/724-4000
Camera dimensions (w × h × d, in inches)	5.5 × 3.0 × 1.5	5.1 × 3.0 × 1.9	5.1 × 2.6 × 1.6	5.3 × 2.6 × 1.6	4.0 × 2.5 × 1.2	5.1 × 2.8 × 1.6
Weight (with batteries, in ounces)	13	12	7	9	4	10
Maximum image size (in pixels)	640 × 480	640 × 480	320 × 240	640 × 480	493 × 373	640 × 480
Built-in storage	2MB	none	2MB	4MB	1MB	2MB
Included removable storage	○	2MB	○	○	○	○
Removable storage support	○	●	○	○	○	●
Storage capacity (images at maximum size)	36	30	96	64	8	14
Closest focal distance (in inches)	24	3.5	4	4	24	24
Built-in flash	●	○	●	○	○	●
LCD preview and playback	○	●	●	●	○	●
Optical viewfinder	●	snap-on	○	○	●	●
Selectively erase images	●	●	●	●	●	●
Date-stamp photos	●	●	○	○	○	○
Photoshop acquire module	●	●	●	●	●	●
Save Photoshop image previews	●	●	○	○	●	●
Bundled software	Adobe PhotoDeluxe; Agfa PhotoWise	Adobe PageMill, PhotoDeluxe; Apple PhotoFlash, QuickTake 200 Camera Access utility; PictureWorks NetCard	Adobe PhotoDeluxe; Casio QV-PC utility	Adobe PhotoDeluxe; Casio QV-PC utility	Kodak PictureEasy; MetaCreations Kai's Power Goo; PhotoWorks PhotoEnhancer	Kodak PictureEasy; MetaCreations Kai's Power Goo; Photo- Works PhotoEnhancer

● = yes; ○ = no. * Based on features, implementation, innovation, performance, reliability, ease of use, and value. (see Star Ratings section for full explanation.) ** Actual prices could be higher or lower than the es

The QuickTake 200's plastic viewfinder clips on top of the camera, unlike the built-in viewfinders on the DC25 and D-200L. It's not elegant but it's a feature that the otherwise similar DS-7 doesn't offer. Conversely, the PhotoPC 500 comes with a built-in viewfinder but supports an optional \$199 attachable color LCD screen. It's great for viewing your shots on the spot, but the added appendage makes the camera awkward to carry.

Shoot and Wait

Shooting with a digital camera is simple. These are essentially fixed-focus, point-and-shoot cameras; your only choice is mode—normal or economy (the latter saves storage space). Press the shutter, the camera beeps, and the shot is recorded.

But try to take another shot right away and you're in for a disappointment. We had to wait from 2.2 to 5.4 seconds between shots while the camera stored the image. So if you're trying to capture a sequence of images, remember: with film,

you can catch the action, but with a digital medium, you have to anticipate it.

The variation in delay times is due to three factors: image size, image resolution, and JPEG compression. The more information in the shot, the longer it takes to record. Also, some cameras compress images more than others to speed up frame capture and download rates. With severe compression, the unfortunate compromise is reduced image quality.

Point, Click, and Store

Another consideration when shopping for a digital camera is storage—how many pictures a filmless camera can hold before you must download them to your Mac. Unless you travel with a PowerBook, limited storage space will curtail how many pictures you can take.

Six cameras we tested use tiny removable memory cards that let you store pictures while you're on the road. The others have 1MB to 4MB of built-in storage, with capacity ranging from a low of 8 to a

high of 96 best-quality images (see the table, "Snap Facts: Digital Cameras under \$600 Compared").

The nice thing about the removable cards is that once a card fills up, you can swap in another and keep shooting. The downside is the cost for additional cards.

The QuickTake 200 and DS-7 come with a 2MB wafer-thin SmartMedia card that holds up to 22 maximum-quality shots. Additional cards cost \$69. The Q-mini's 2MB CompactFlash card from Panasonic (additional cards cost \$69) resembles a 1-by-2-by-0.25-inch PC Card. To replace it, pry open a panel, flip down a flimsy lever, and give it a firm push. If anything on this camera breaks, I'd bet it's here.

Swapping flash memory into the stocky Q-EZ is more elegant: you slide a knob to open a panel, press a release button, and swap in Konica's stamp-size card (additional cards cost \$49). The DC25 is the simplest: you just slide in a Type 1 PC Card.

Epson	Fuji Photo Film	Konica	Konica	Olympus
PhotoPC 500	DS-7	Q-EZ	Q-mini	D-200L
★★★/6.1	★★★★/7.1	★★★/5.9	★★★/6.4	★★★/6.6
\$499	\$599	\$399	\$599	\$599
310/782-0770	914/789-8100	201/568-3100	201/568-3100	516/844-5000
5.5 × 3.2 × 2.1 (8.5 wide with LCD)	5.1 × 3.0 × 1.9	6.1 × 3.3 × 2.8	3.5 × 3.5 × 2.0	5.7 × 2.8 × 1.8
14 (19 with LCD)	12	16	12	15
640 × 480	640 × 480	640 × 480	640 × 480	640 × 480
2MB	none	none	none	2MB
○	2MB	2MB	2MB	○
●	●	●	●	○
30	30	32	23	20
24 (8 with LCD)	3.5	1.4	1.4	8
●	○	○	●	●
optional***	●	○	●	●
●	○	●	○	●
○	●	○	●	●
●	●	●	●	●
○	○	●	●	●
○	○	●	●	●
Claris Home Page; Network Sound & Light Postcards from the Net; Storm Easy Photo	Adobe PhotoDeluxe; Fujifilm SD-T7/M Data Transfer Software	Adobe PhotoDeluxe; Konica Q-EZ utility	Adobe PhotoDeluxe; Konica Q-mini utility	Adobe Acrobat, PhotoDeluxe; Olympus D-200L utility

street price provided by the company. *** Additional \$199 for LCD.

From the Camera to the Mac

Eventually you must download your images from the camera's storage to your hard drive. All the cameras we tested connect to the Mac via the serial port and use a software utility that allows you to see thumbnails of the shots. Click on a thumbnail, and the camera downloads it to your hard drive.

Although installing each camera's software went smoothly, they had some irksome quirks. For example, Agfa's PhotoWise software was supposed to download images to a folder I chose, but it only saved shots to a default folder.

The software for the Casio cameras, the D-200L, and the Q-mini all force you to name and save images one at a time, rather than downloading the whole batch and automatically assigning numbers to each file. Fuji's software shows gray boxes instead of thumbnails. To see a thumbnail, you have to guess which gray box it is.

The QuickTake 200 supports QuickTime IC (Image Capture), so you can

drag and drop thumbnail images from the software straight into programs such as the bundled Adobe PageMill.

Faster Downloads

Each camera has a fixed resolution—640 by 480 pixels—except the DC20 with 493 by 373 and the QV-10A with 320 by 240. The higher the resolution, the more information the camera captures. When you use a camera's economy mode so that you can take more pictures, the camera crops the photo or compresses the data more. Either way, the camera stores less information, which means lower-quality output but faster download speeds. Ideally, a camera downloads photos quickly but degrades quality minimally.

Transferring data at 12.12 Kbps, the D-200L moves more data to your Mac per second than any of the other cameras, yet produces crisp, clean pictures. Neck and neck for speed with the D-200L is Konica's Q-mini, at 11.84 Kbps, but its lower resolution and heavy-

handed JPEG compression yield blurred and noticeably pixelated shots. (Oddly, Konica's Q-EZ poked along at 4.75 Kbps, the slowest we tested.)

The DS-7 and the Apple QuickTake 200, both manufactured by Fuji, are identical in construction and components except for one thing: the way the two cameras implement economy mode. Normal mode for both is 640 by 480 pixels. To save storage space and accelerate downloading in economy mode, the DS-7 crops the image down to 320 by 240 pixels (this smaller area is outlined by a white rectangle visible on the LCD), while the QuickTake 200 compresses the heck out of the 640-by-480-pixel shot using JPEG. Since smaller images contain less information, they download faster, but I favor Apple's decision to opt for a bigger picture, even though the compression leaves behind some pixel artifacts.

Picture Imperfect

Regardless of the compression scheme, image quality actually starts with the lens's precision and the camera's exposure accuracy.

No digital camera produced perfect shots—hues shifted and pixels marred oblique lines. For example, test images from the Casio cameras were beyond image-editing repair, due to missing colors and serious pixel noise in detail areas. The sharpest shots came from the D-200L, ePhoto 307, and PhotoPC 500, while the QuickTake 200 and DS-7 delivered superior color accuracy (see the sidebar "Digital Proof Sheet").

Software for Image Artistry

Each camera bundles a basic image-editing application so you can apply sharpening filters (which they always need), adjust color balance, crop out unwanted details, or go wild distorting shots with a small arsenal of special effects.

Eight of the cameras come with Adobe PhotoDeluxe. Designed for the nonprofessional graphics user, it helps you with corrections and walks you through fun imaging projects such as inserting backgrounds and turning your kid's mug into funny money.

Weather, Warranties, and Power

Fun is fun, but what about the tire-kicking issues—reliability, durability, and power consumption?

All-weather film cameras are as ugly

Digital Images: How Many, How Fast, How Good

When you're shopping for a digital camera, image quality is a key consideration. In this category, the Olympus D-200L was a clear-cut winner with our panel of experts. In addition to how many images a camera will hold, you'll want to take into account how long it takes to shoot, preview, and download the images. To get an idea of how long it takes a camera to transfer images to your Mac, look at the download rate, which shows the speed at which data is transferred. Remember that cameras that hold more images will take more time to download. For example, the Casio QV-100 and the Apple QuickTake 200 have similar transfer rates, but the QV-100 holds over twice as much image data and thus takes roughly twice as much time to download when it's filled to capacity.

■ Best overall performance. Lower scores are better for results in seconds. Higher scores are better for download rate and image quality.

SPEED						QUALITY	
Storage Capacity/ Number of Pictures*	Download Rate	Download Time (in seconds)	Thumbnail Preview (in seconds)	Time between Pictures (in seconds)		Exposure	Image Quality Score
Agfa ePhoto 307	2MB/36	9.35 Kbps	219	29	4.1	Manual flash (fill)	3.7
Apple QuickTake 200	2MB/30	7.59 Kbps	270	32	4.5	Small aperture	3.0
Casio QV-10A	2MB/96	5.74 Kbps	357	125	3.8	Small aperture	1.3
Casio QV-100	4MB/64	7.45 Kbps	550	206	4.9	Small aperture	2.3
Eastman Kodak DC20	1MB/8	6.13 Kbps	167	13	3.4	**	2.0
Eastman Kodak DC25	2MB/14	6.17 Kbps	332	49	2.2	Manual flash (off)	2.0
Epson PhotoPC 500	2MB/30	9.94 Kbps	206	21	4.2	Manual flash (fill)	3.3
Fuji Photo Film DS-7	2MB/30	8.53 Kbps	240	***	4.8	Small aperture	3.3
Konica Q-EZ	2MB/32	4.75 Kbps	431	35	5.4	Auto flash (off)	2.7
Konica Q-mini	2MB/23	11.84 Kbps	173	9	4.8	Auto flash (off)	3.3
Olympus D-200L	2MB/20	12.12 Kbps	169	15	4.4	Auto flash (off)	4.5

*Maximum resolution. **No exposure options available. ***No thumbnail preview.

Behind Our Tests

Macworld Lab tested the speed of each camera by measuring how long it took to download and preview images with the camera's storage filled to capacity; we used the download utilities that shipped with each camera. Memory allocation was set to 30MB to minimize disk access. We also timed how long it took before each camera was ready to take another picture, using the highest resolution setting with the flash disabled. All tests were performed on a Power Macintosh 7500/100 running System 7.5.5, with 64MB of RAM, a 256K cache, a 17-inch monitor set to millions of colors (at 832-by-624 pixel resolution), a disk cache set to 1024K, virtual memory and

RAM disk disabled, and AppleTalk enabled.

A panel of Macworld staff rated the color fidelity and detail of a still-life image captured by the cameras on a scale of 1 to 5 (with 1 unacceptable and 5 excellent). The panel looked at two different exposure types for each camera: for cameras with a flash, one without a flash and one with a fill flash; for cameras without a flash, one with a large aperture setting and one with a small aperture setting. The benchmark includes the higher score of the two images.—Macworld Lab testing supervised by Jeff Sacilotto

as sin, but sometimes it makes sense to sacrifice looks for practicality. Drop one of these digital beauties while snowboarding and your photography will come to a halt, but even rain gave me a close call with the Q-mini. The camera is fairly rugged, but when I opened a flash-memory panel on a wet day, I could see part of the circuit board inside. One chance raindrop and this device could have been toast.

Remember that each of these cameras is covered by a brief, one-year warranty. Only Kodak's DC25 offers an optional three-year replacement plan for \$40 more.

While digital cameras save on film, they gobble batteries—particularly models with those power-guzzling LCD screens we like so much. You can expect to feed three to four fresh AA lithium ion or alkaline batteries during every other outing. Only the DC20 stayed charged for nearly eight hours on a diet of just one 3-volt LiIon battery. I squeezed two hours out of each Casio, while the other cameras

worked for almost three hours.

Only the QuickTake 200, DS-7, and Q-mini include an AC adapter; with the others, this option costs \$19 to \$49. If you plan to use the camera frequently, invest in an adapter and rechargeable batteries.

Macworld's Buying Advice

Ironically, the camera I liked best for image quality, the \$599 Olympus D-200L, is being discontinued as I write. Olympus informs us a \$499 camera, the D-220L, that we'll like even better is replacing it. (Stay tuned to *Macworld* for a review when the D-220L hits the streets.)

In the meantime, the \$599 Apple QuickTake 200 ran a close second to the Olympus in image quality and bests it for features such as a close-up lens and removable storage. The QuickTake 200 noses past the look-alike Fuji DS-7—also an excellent camera—thanks to a more logical image-compression scheme and streamlined downloads.

For a no-frills camera that produces

surprisingly crisp shots, Agfa's \$299 ePhoto 307 is your best bet.

Given the stream of new models, enticing features, and competitive pricing, now is a great time to shop for a digital camera. **m**

JOHN GODDARD is a freelance writer, photographer, and former *PC World* editor now living in Prague.

EDITORS' CHOICE

The digital-camera market is changing too rapidly for us to pick an Editors' Choice. The best camera we tested, the Olympus D-200L, is being replaced by the D-220L.

REAL PRODUCTS REAL RATINGS

Reviews you can trust Unlike other publications, *Macworld* rates only final shipping products, not prototypes. What we review is what you can actually buy.

You'll **RAVE** about the next **WAVE** in
SCREAMING PERFORMANCE.

MAXpower PRO

750 CPU Upgrade

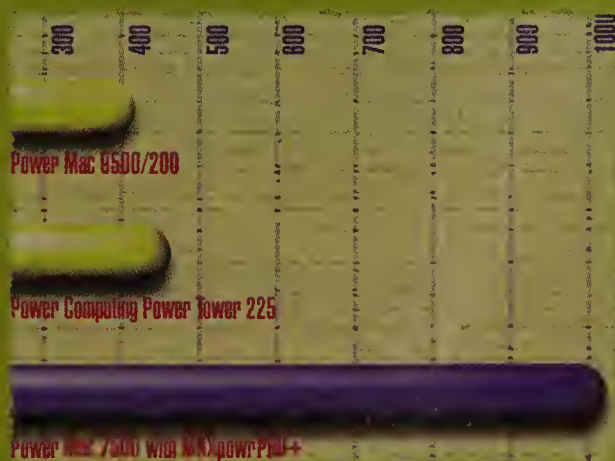
Macworld
BEST of SHOW
 1997 BOSTON EXPO

www.newertech.com



In the face of the tidal wave of 750 CPU computers that are about to roll out,

newertech
 FAST FORWARD THINKING



Preliminary MacBench 4.0 tests say that the MAXpower PRO with 512K of backside cache nearly doubles the performance of older 604e processors.

The MAXpower PRO+ features an amazing 1MB of backside cache that helps boost processing speed an astounding 2.5 times. And both upgrades are built by Newer. We're recognized by the trade press for the stable performance of our accelerators.

So if you want to add incredibly powerful 750 chip processing to your PowerPC Mac or clone, ride the tide with MAXpower PRO or MAXpower PRO+.

Newer Technology, Inc.

Phone: 316-943-0222 • FAX: 316-943-4515

4848 W. Irving • Wichita, KS 67209

E-mail: info@newertech.com

INGRAM MICRO 800-MERISEL 800-998-0038 MacConnection 800-248-0800 MacZone 800-255-6227 MacWarehouse 800-560-6800 MacMall 800-848-8967 Cyberian Outpost 800-258-2622 MacCPU 800-929-4622 ClubMac

Newer is a registered trademark and MAXpower is a trademark of Newer Technology, Inc. All other names are trademarks of their respective holders.

Circle 83 on reader service card

Jet.



XB-PRO Tower Series

604e 200mhz	\$ 2250
604e 225mhz	\$ 2350
604e 250mhz	\$ 2500

XB-Pro Tower Base Configuration:

- Dual Processor Upgradeable
- 16 megs of ram (1 gig max)
- 512K L2 Cache
- Dual SCSI Channel
- Tower model - 8 Drive Bays
- 8 PCI Expansion Slots

Fuel up with the options you want from the list over there ➡

(Compare to Apple 9600 series)



mactell™

the most

Unless you configure your own system, you could be in for a bumpy ride. You need to chart the right course. How much RAM? What speed CD - 8, 16 or 24X? Or a read/write? An internal Jaz drive? Four internal Zip drives? (Hey, you're flying this thing.) Only you know exactly what you need.

At Mactell, our base Mac systems give you the power and maneuverability to build the perfect system to get you to your destination.

So check out what we have to offer, then suit up, strap in, and configure yourself a hot one.

XB Series Midtower or Desktop

603e 250 mhz	\$ 1125
603e 300 mhz	\$ 1375
604e 200 mhz	\$ 1125

Twister Mid or Typhoon Desktop

603e 200 mhz	\$ 1150
603e 240 mhz	\$ 1300
603e 275 mhz	\$ 1450

Mactell and Mactell Logo are registered trademarks of Mactell Corporation. The Mac OS and Mac OS Logo are trademarks of Apple Computer, Inc., and are used under license from Apple Computer. All other trademarks and product names used herein are the property and/or registered property of their respective owners. Mactell is not responsible for typographical and photography errors. Prices, specifications and availability subject to change without notice. Leasing terms and credit approval provided by third party. Monthly lease payment based on 36 month term. † Extended warranty and extended on-site plans available. Call for details. Δ Computer chassis may not match exactly shown.

Fuel.

Options & Accessories



16 meg ram DIMMs	\$ 72
32 meg ram DIMMs	\$ 125
64 meg ram DIMMs	\$ 235
Spitfire in-line cache for Typhoon & Twister (80mhz processor bus speed)	\$ 245
100 meg internal SCSI Zip drive	\$ 125
1 gig internal SCSI Jaz drive	\$ 299
12x SCSI CD-ROM drive	\$ 84
24x SCSI CD-ROM drive	\$ 199
6x read/2x write SCSI CDR w/Toast	\$ 450
6x read/4x write SCSI CDR w/Toast	\$ 675
2.1 gig IDE hard drive	\$ 210
2.1 gig SCSI hard drive	\$ 275
2 meg PCI Accelerated Video Card w/Video OUT	\$ 132
4 meg PCI Accelerated Video Card w/Video OUT	\$ 165
4 meg PCI Accelerated Video Card TV tuner w/Video OUT	\$ 225
2/4/8 meg IXM twin-turbo Accelerated card	Call or Check Website
10BaseT ethernet card	\$ 36
10/100BaseT ethernet card	\$ 79
Mactell 14" multisync (13.2" vis)	\$ 250
Mactell 15" multisync (14" vis)	\$ 295
Mactell 17" multisync (16" vis)	\$ 495



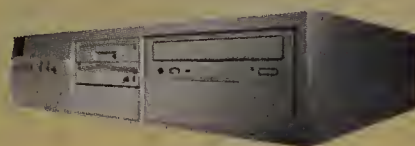
**Configure your system on our website
with the latest, up-to-the-minute prices.**

Call for business lease information.

Some prices shown are based on system purchase.



XB Series Midtower



XB Series Desktop

customizeable mac system.

Mactell offers a complete line of third party peripherals, thirty day money back guarantee on standard configurations, and one year on-site warranty with all systems. Major accounts, educational institutions and government agency purchase orders accepted. Contact Mactell to establish an account. Dealer, integrator, distributor, and leasing inquiries welcome.

www.mactell.com

1 888 mactell

Mactell Corporation • 7000 Cameron Rd., Austin, Texas 78752
888-622-8355 • 512-323-6000 • Fax 512-323-6394

Circle 75 on reader service card

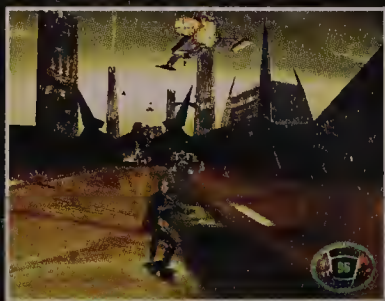


IT THINKS. THEREFORE IT KILLS.

Fully 3-D rendered graphics, killer gameplay like you've never seen before, advanced artificial enemy intelligence, and the revolutionary sniper mode. See for yourself why MDK sets the new standard for action gaming.

- Features the revolutionary sniper mode that allows you to zoom in and pick your enemy off with astonishing accuracy.
- Fully reactive "smart enemies" think, listen and communicate in a calculated assault on your life.
- 60 arenas spread out of 6 massive cities.
- An arsenal of unique and twisted weapons including bombs, decoys, homing missiles, parachutes and more.

COMING TO MAC THIS FALL.



Actual MAC Screen Shots.

<http://www.playmatestoys.com>

©1997 Shiny Entertainment, Inc. MDK is a trademark of Shiny Entertainment, Inc. All rights reserved.

Macintosh conversion developed by Shokwave Software, Inc.

Artwork and design ©1997 Playmates Interactive Entertainment, Inc.

PIE® is a registered trademark of Playmates Interactive Entertainment, Inc. All rights reserved.

Shiny
www.shiny.com



Circle 10 on reader service card



9 scanners under \$600 generate crisp images

by Peter M Stoller

SCAN IT

SAY YOU'VE GOT A KILLER PRODUCT you want to pitch on your Web site. Or you have several new faces to introduce in your company newsletter. Or you're writing a term paper on Italian Renaissance paintings. You know a picture is worth at least a thousand words, but how in the world do you get that picture into your desktop publishing project?

For most people, the answer is a flatbed color scanner. These desktop devices can bring photos, illustrations, and even text right into your Macintosh. They don't provide the mobility of a digital camera (for more on those, turn to the feature "Snap It," in this issue). But they're versatile, and with hot new Macs bringing image-editing muscle down to earth, and the latest ink-jet printers finally making the dream of cheap, high-quality color printing a reality (for more information see the feature "Print It," also in this issue), it's easy to understand the rising demand for good low-cost scanners. Competing to take advantage of the rising demand, vendors are beefing up the hardware specs on their entry-level models from 300-dots-per-inch to 600-dpi

resolution and from 24-bit to 30-bit color while dropping their prices—for some, to under \$300.

When it comes to performance and value, hardware specs and price tags alone do not tell the whole story. So Macworld Lab rounded up nine scanners that sell for under \$600 on the street, put them on the test bench, and checked them all for speed. We also laid our test scans in front of *Macworld's* panel of graphics experts, who compared them for sharpness and color fidelity. Finally, we evaluated the devices' scanning utilities and other bundled software to see which scanner really gives you the most for your money.

We didn't find any giant-slayers among these cut-rate contenders; if you're producing images for high-end publishing, you won't find the level of features and image quality you need here. For Web and mainstream desktop publishing, though, we found some solid performers, and—surprise!—the best of them have neither the most impressive advertised specs nor the biggest price tags.

Details, Details

Whether high end or low, all scanners work essentially the same way. The scanner has a transparent surface on which you mount your document. A light source illuminates the document, so the scanner's *optics*—its network of lenses and mirrors—can "see" it. A transport mechanism moves the optics and light assembly over the document, projecting the image line by line onto the optical sensors, which then turn the image into a sequence of tiny colored dots that you view and edit on screen. What distinguishes an excellent scanner from a poor one are primarily the overall engineering and the quality of the components.

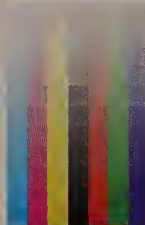
The ability of a scanner to resolve fine details rests in part on how many dots per inch its sensors can capture—its *optical resolution*. The scanners in our survey have optical resolutions of either 300 or 600 dpi. Nowadays that's far from state of the art, but it's plenty for many tasks. Don't be fooled by impressive-sounding specs for *interpolated* resolution. Interpolation is an after-the-fact, "fill-in-the-blanks" software function that's of little practical value.

Get the Picture?

Perform the same scanning operation on ten different scanners, and what do you get? Ten different results. Using either default or automatic settings—whichever produced better results—we scanned both our test image and an industry standard IT8 color-calibration swatch on each of the scanners under scrutiny. Then we asked our service bureau to use a state-of-the-art drum scanner to do the same, and prepare a Matchprint as a reference (top row, far left). By comparing our scans with the Matchprint, you can see how much these scanners deviate from the ideals of color and detail resolution.

Of course, none of these scans is perfect. But the closer an image is to perfect, the more likely it is that some judicious editing will make it right. Remember, you can't fix what isn't there, so while you might be able to correct the heavy color cast that the Microtek ScanMaker V300 imposed, you can never get back the highlights that ScanMaker E6 didn't capture.

Software tools also make a difference; while the Hewlett-Packard HP ScanJet 5p scan has color roughly comparable to that of the Umax Astra 600S, HP PictureScan's color-correction tools can't touch Umax VistaScan's.



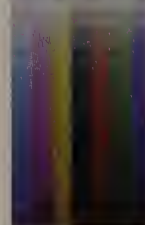
Professional Drum Scan A skilled technician operating equipment that retails for \$100,000 or more can achieve scans you couldn't hope to duplicate on even the best sub-\$600 unit. The colors are true to the original and the details razor-sharp.



Agfa SnapScan With Agfa's great software, the SnapScan snaps a sharp picture—look at the watermarked bill. However, it's a dark one, and note the brown tone of the pear and picture frame.



Microtek ScanMaker E6 With colors close to the Apple Color OneScanner's, if a bit washed-out, and merely average detail resolution, the ScanMaker E6 relies on Microtek's clever ScanWizard software to elevate it to contender status.



Microtek ScanMaker V300 The bargain-priced ScanMaker V300 comes with great software and captures surprisingly good detail. Too bad the color is marred by a heavy blue cast.

So, more optical resolution is better, right? Not necessarily. Your final image resolution is limited to what your output device can handle. For on-screen display at 72 dpi, as on a Web page, or for printing halftones to a 600-dpi monochrome printer, as in a typical newsletter, a scanning resolution over 300 dpi gets you nothing but bigger files and slower printing and image-editing performance. Higher optical resolution is important when you need to enlarge small originals, scan line art, or print to high-resolution output devices. If you don't need those capabilities, don't pay extra for them.

There's another reason higher optical resolution doesn't guarantee greater detail. Just as you won't get a sharp photo from a camera with high-grade film and a blurry lens, so you won't get fine detail from a scanner with high resolution and

fuzzy optics. Inexpensive optics (and transport mechanisms) keep costs down but can also limit image quality.

So, which of these scanners can really sweat the details? Compare the output samples, especially the watermark on the note, texture of the fabric, ridges on the pear's stem, and grain of the wooden frame. We did, and we found that, aside from Umax's (www.umax.com) 600-dpi Astra 1200S, the best detail in the scans came from the Agfa (www.agfahome.com) SnapScan and the Microtek (www.microtekusa.com) ScanMaker V300—both 300-dpi scanners.

Color Counts

In an effort to yield more-accurate color, manufacturers are making scanners that capture more colors. A 24-bit scanner captures 8 bits (256 levels) each of red,

green, and blue—a total of 16.7 million colors; a 30-bit scanner, with 10 bits (1024 levels) per primary color, captures over a billion colors.

But your Mac can't display more than 16.7 million colors, and few 30-bit scanners produce final scans with more than 24 bits. Besides, 24-bit color is considered photo-realistic. So what's the point of providing the extra bits? Simple: the last couple of bits per color tend to be inaccurate. If you increase the total number of bits in the scanner, the scanner software can toss out the extra bits and deliver a more accurate 24 bits.

Simple in theory, that is. In our tests of the 30-bit scanners, the Pacific Image Electronics (www.scanace.com) ScanAce II's colors were washed-out, the Microtek ScanMaker E6 had trouble with highlights, and the Umax Astra 1200S had a



Apple Color OneScanner 600/27 The user-friendly OneScanner's dark colors are a hair better than the Umax Astra 600S's, but otherwise the Apple scanner gets nearly identical results for more than twice the price.



Hewlett-Packard HP ScanJet 5p The ScanJet 5p's saturated colors are appealingly eye-grabbing but not accurate. HP's feature-starved software is a big minus for anyone who wants to go past one-button scanning.



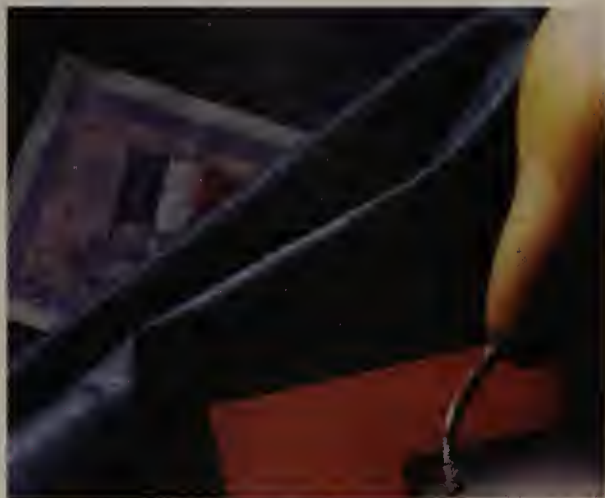
La Cie Silverscanner Pro The Silver-scanner Pro yields dimmer, greener colors than the others—note the yellows and highlights on the color target—and less detail. Maybe La Cie's new software will help; the software we tested didn't.



Pacific Image Electronics ScanAce II The ScanAce II's washed-out, fuzzy scans and slow performance prove that 30-bit color and 600-dpi resolution specs don't guarantee quality.



Umax Astra 600S On balance, this is the best deal in the bunch. Its slightly blue scans fall just shy of the Color OneScanner's and ScanMaker E6's, yet the 600S costs about half as much as those machines. Plus, it has great software.



Umax Astra 1200S The Astra 1200S captured the best detail and most accurate color target, yet it reproduced the dark green fabric as midnight blue. Not bad, but not worth twice as much as the Astra 600S.

tendency to go blue. Meanwhile, the 24-bit Hewlett-Packard (www.hp.com/go/scanjet/) HP ScanJet 5p and 27-bit Apple (www.imaging.apple.com) Color OneScanner 600/27 gave the 30-bit scanners a real run for their money. The distinction lies in how each scanner's color tables translate what its optics see to the digital image you see on screen. Without fairly accurate tables, more bits just get you more wrong colors.

While sharpness and color accuracy are the most important areas of scanner performance, speed also counts. Slow scans and previews hold up production. Fast previews are particularly critical because most of your interaction with the scanner—cropping, sharpening, basic color correction—is in the preview process.

The Agfa SnapScan gets you to work

on prescan editing fastest of all—more than three times faster than the sluggish ScanAce II. The Color OneScanner 600/27 and Astra 1200S make good time in previews, too, as well as being the standouts in final color scanning time. (See the benchmark, “Color Scanners: Chomping at the Bits.”) The value of quick previews, though, depends largely on what you do with those previews once you've got them.

Scanning Software and Options

Great hardware won't do you much good without software that lets you quickly and easily extract the best results your scanner can deliver. These scanners all include software that lets you bring images directly into image-editing programs such as Adobe Photoshop. Finding and using the tools for such routine but critical func-

tions as selecting the scan area, setting the scanning resolution, adjusting tonal range, and applying sharpening should be intuitive. Unfortunately, that's not always the case.

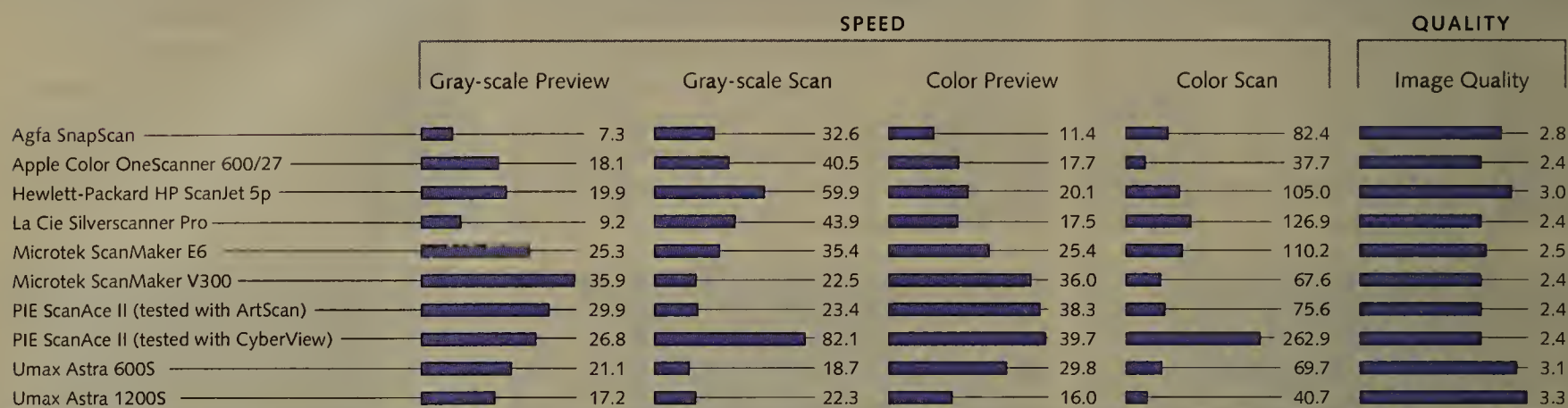
Good scanning plug-ins, such as Agfa's FotoLook, Microtek's ScanWizard, and Umax's VistaScan, achieve an effective balance of power and usability so that you can fine-tune your scans without constantly thumbing the manual for direction. Their many image-control options are easy to access and use, with clear visual feedback so you know what you'll get before you scan.

VistaScan has the clearest interface, simple enough for a beginner to use without compromising on vital features. The highlight is its full, flexible automation for streamlined scanning that doesn't stint on quality.

Color Scanners: Chomping at the Bits

The most important consideration in choosing a scanner is not speed, but image quality. Here, our panel gave the win to the two Umax scanners, with the Hewlett-Packard ScanJet 5p and Agfa SnapScan nabbing place and show. Speed has no bearing on the quality of your scans, but it can make a big difference in the quality of your scanning experience. These numbers show which scanners will have you tearing through work, and which tearing out your hair. The SnapScan lived up to its name on previews, while Apple's Color OneScanner 600/27 is the color scanning speed champ by a wide margin. The two sets of results for the PIE ScanAce II show that scanning software can determine speed: while JetSoft's ArtScan performs respectably on final scans, PIE's own CyberView could have you wondering if the scanner is plugged in.

Speed results are in seconds; shorter bars are better. Image quality is based on a 5-point scale; longer bars are better.



Behind Our Tests

To test a scanner's speed, Macworld Lab measured the prescan time (in color and gray scale) and the final scan time for two 8.5-by-10-inch images, one color and one gray scale, at 300 dpi. All scanners were tested using their default settings. We allocated 30MB of RAM to Adobe Photoshop when a scanner plug-in was involved, or 30MB to the scanner applications themselves, so that disk access (performance of the hard drive) is not factored into the timings. All tests were performed on a Macintosh 7500/100 (System 7.5.5) with

64MB of RAM, a 256K L2 cache, a 17-inch Apple Multisync monitor set to millions of colors, 832 by 624, disk cache set to 1024K, virtual memory and RAM disk disabled, and AppleTalk enabled.

To judge image quality, a panel subjectively evaluated scans from each product produced at its default settings. We rated each scanner for color fidelity, sharpness of detail, accurate gray reproduction, and highlight and shadow detail.—Macworld Lab testing supervised by Jeff Sacilotto

Low-Cost Scanners: The Good News Is Good Deals

Company	Product	Star Rating *	Price (list/ company's estimated)	Phone Number	Maximum Scanning Area (in inches)	Optical Resolution (in dpi)	Maximum Color Depth	Automatic Document- Feeder Option
Agfa	SnapScan	★★★/6.9	\$299/\$299	508/658-5600	8.5 × 11.7	300	24-bit	\$250 (60 pages)
Apple Computer	Color OneScanner 600/27	★★★/6.3	\$629/\$549	408/996-1010	8.5 × 11.5 (8.5 × 14 with document feeder)	300	27-bit	\$359 (20 pages)
Hewlett-Packard	HP ScanJet 5p	★★/5.2	530/\$449	415/857-1501	8.5 × 11.7	300	24-bit	NA
La Cie	Silverscanner Pro	★★/4.1	NA/\$349	503/844-4500	8.5 × 11.67	300	24-bit	NA
Microtek	ScanMaker E6	★★★/5.6	NA/\$299	310/297-5000	8.5 × 13	600	30-bit	\$400 (10 pages)
	ScanMaker V300	★★★★/6.7	NA/\$149	310/297-5000	8.5 × 11.7	300	24-bit	NA
Pacific Image Electronics	ScanAce II	★★/3.5	\$399/\$399	310/214-5281	8.5 × 14	600	30-bit	\$329 (50 pages)
	EDITORS' CHOICE							
Umax	Astra 600S	★★★★/7.8	\$299/\$249	510/651-4000	8.5 × 14	300	30-bit	NA
	Astra 1200S	★★★★/7.0	\$549/\$449	510/651-4000	8.5 × 14	600	30-bit	NA

NA = not available. * Based on features, implementation, innovation, performance, reliability, ease of use, and value. (See Star Ratings section for full explanation.)

FotoLook has the widest range of features for the advanced user, such as an XTension for scanning directly into QuarkXPress. It's a bit deep for beginners, though, so Agfa also includes FotoSnap, a vastly simplified (but still functional) plug-in.

ScanWizard looks cluttered at first, but once you adjust to it, you'll find its tool set well stocked and sensibly organized. If only you could switch between ScanWizard and Photoshop after scanning. Unfortunately, ScanWizard's dialog box is in a fixed position in front of the image, so you have to quit it to see the results, when you may want to make minor adjustments and rescan.

Apple's OneScanner Dispatcher is effectively geared toward the novice, but the lack of such features as prescan sharpening and gamma control limit its usefulness for more advanced users. Hewlett-Packard's PictureScan has virtually no image-control options beyond specifying one of four original document types: Pictures, OCR/Text, Fax, and Other.

La Cie's (www.lacie.com) Silverscan plug-in has inadequate sharpening and black- and white-point controls, and has an interface too confusing for even an experienced user to navigate. (At press

time, La Cie was readying new software, which should be shipping by the time you read this.) Finally, Pacific Image Electronics (PIE) offers two options—PIE CyberView and JetSoft ArtScan—both with highly uneven interfaces and weak feature sets.

All the scanners include optical character recognition (OCR) for converting scanned characters to editable text, and an entry-level image-editing program. Microtek, PIE, and Umax bundle the full version of Photoshop for about \$150 to \$200 extra; La Cie offers Photoshop LE for \$100. If you intend to do extensive OCR work, consider a scanner with an optional automatic document feeder for scanning multiple pages. But if you're tempted by the optional transparency adapters several vendors offer, remember that transparency scans typically require substantial enlargement, so even a 600-dpi scanner is barely adequate (see the table, "Low-Cost Scanners: The Good News Is Good Deals").

Macworld's Buying Advice

It's hard to beat the Umax Astra 600S for its good balance of color accuracy, preview speed, strong software, and value. Close behind are the Microtek Scan-

Maker V300 and Agfa SnapScan, which haven't the Astra 600S's color accuracy but beat it on sharpness and, like the Astra 600S, have good software. All three have irresistibly low prices—the lowest in our survey. The highest quality for the lowest cost? Now that's a picture we really like. **m**

PETER M STOLLER (afcpeters@aol.com) is a consultant to America Online's Mac OS Resource Center.

EDITORS' CHOICE

★★★★/7.8 **Umax Astra 600S** With its good color fidelity and software usability on the one hand, and its low image noise and price on the other, the Astra 600S is our top choice for a low-cost scanner. **Company:** Umax Technologies (510/651-4000, www.umax.com). **Company's estimated price:** \$249.

REAL PRODUCTS REAL RATINGS

Reviews you can trust Unlike other publications, *Macworld* rates only final shipping products, not prototypes. What we review is what you can actually buy.

Umax Parrots Reality



Umax Vista S-E6



Umax Astra 600S

When *Macworld* evaluated scanners earlier this year ("Scanning for the Rest of Us," *Macworld*, March 1997), the Editors' Choice award went to the Umax Vista S-6E (left), a nifty little performer that retailed for an affordable \$345. Shortly thereafter, Umax replaced the Vista S-6E with the Astra 600S, list priced at \$299, and we were besieged by readers wanting to know whether the new product was really an improvement on the old. Sure enough, our test scan from the Astra 600S was slightly but noticeably brighter and sharper than that from the Vista S-6E.

Transparency Adapter Option	Included Software
\$200 (8 × 10 in.)	Agfa FotoLook, FotoSnap, and FotoFlavor; Caere OmniPage LE; MicroFrontier Color It; ULead SoftCopy
NA	Acquire Scan Module (Adobe Photoshop plug-in); Apple OneScanner Dispatcher; Xerox TextBridge PageManager LE; Postcards for the Net
NA	Adobe Photoshop LE; Caere OmniPage Lite OCR; HP PictureScan, ScanJet Copy, Scanner Calibration and Utilities; Visioneer PaperPort
NA	Adobe Photoshop LE (prepress only); La Cie Silverscan plug-in, driver, and control panel; Xerox TextBridge
\$299	Adobe Photoshop or MicroFrontier Color It; Caere OmniPage LE or Xerox TextBridge Pro; Microtek ScanWizard
NA	Caere OmniPage LE; MicroFrontier Color It; Microtek ScanWizard; Visioneer PaperPort
\$379 (8.5 × 13 in.)	Adobe Photoshop; JetSoft ArtScan; MicroFrontier Color It; PIE CyberView; TextBridge Classic
NA	Adobe PhotoDeluxe; NewSoft Presto PageManager; Umax VistaScan
\$249 (8.5 × 11 in.)	Adobe PhotoDeluxe or Photoshop; NewSoft Presto PageManager; Umax VistaScan

Now add digital images to your work fast, and easy.....



Introducing Digital Mavica®.

The World's First 3.5" Floppy Disk Digital Camera



Presentations



**Documents/
Publications**



**Databases/
Spreadsheets**

From internal newsletters to company reports, wherever there's a story to tell, you can tell it better with pictures taken with a Sony Digital Mavica.

Digital Mavica is compatible² with Windows® 3.1/Windows® 95/
Windows NT® 4.0 or Mac™ OS System 7.5.

SONY

like never before!



SHOOT!

Point and shoot!

With Sony's new Digital Mavica® Still Camera, adding pictures and images to make professional looking documents has never been easier.

Digital Mavica records on a standard computer floppy so you can play it back on virtually any PC. No more hassles with cables, interfaces, or drivers.



Finally, a Digital Still Camera with Real Camera Features

like a 10x power zoom lens with 1" macro capabilities and auto-focus, auto-white balance and



10-to-1 ZOOM LENS

auto-iris for proper exposure

and a built-in flash and self-timer. Five Camera Mode Settings allow con-

trol of prevailing light conditions:

- Portrait • Landscape
- Beach and Ski • Sports
- Sunset and Moon

Never miss a shot!

Sony's InfoLithium™

Rechargeable Battery allows up to 500 continuous shots¹ with a single charge as it powers a large 2.5" color LCD screen for composing, monitoring and playback.

Digital Mavica is compatible with virtually any PC. It

uses universally compatible high density 3.5" standard computer floppies that can hold up to 20 high

resolution or up to 40 standard resolution images in 24 bit color, 640 x 480 (VGA) JPEG format.

Slip the floppy into a PC and watch the work come

alive. Digital Mavica is compatible² with

Windows®3.1/Windows®95 /Windows NT®4.0 or

Mac™ OS System 7.5. Add images to your spreadsheets, newsletters, Websites or any popular imaging software. Digital Mavica also comes with ArcSoft PhotoStudio for creative options to manipulate images, add text and change backgrounds.

If you can picture it on a floppy, you can see it in your work!



STORE!

A single disk can store up to 40 images!



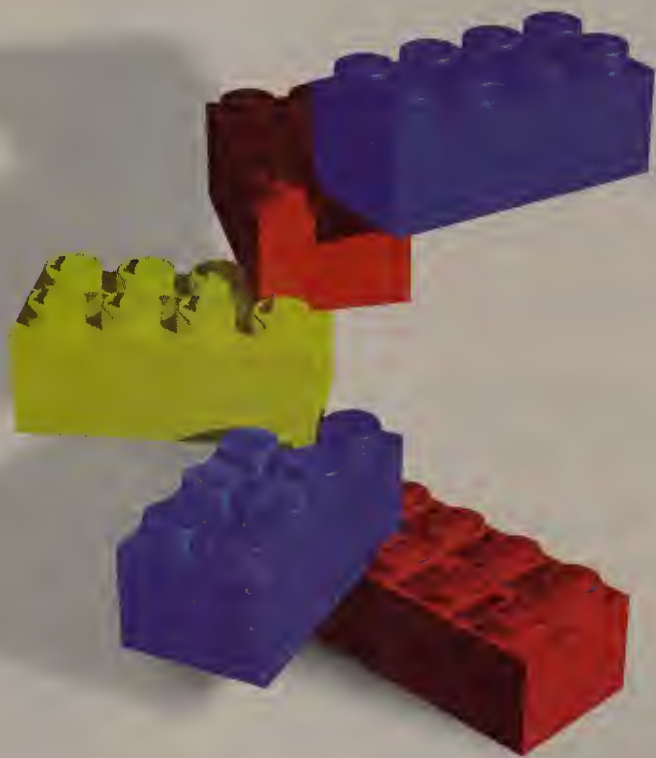
SHOW!

Watch your work come alive!

Digital Mavica®

Imagine That. On a Floppy.™
www.sony.com/mavica

There's a new kid building the block.



DenebaCAD™



© Copyright 1997 DenebaCAD and Design Oriented Tools are trademarks of Deneba Systems, Inc. Software licensed from DOTSOFT, Inc. All rights reserved worldwide. All other trademarks and registered trademarks are the property of their respective holders, and are used herein for information only with no intent to infringe.

Circle 58 on reader service card

Design

Drawing power from simplicity. Designers like to draw, not read manuals. DenebaCAD's Design Oriented Tool™ (DOT) technology gives you unparalleled creative freedom by putting just a few tools – the right tools – in your hands. From 2D drafting, to 3D modeling, to photo-realistic renderings, DenebaCAD's context-sensitive interface lets you spend more time drawing and less time figuring out which tool to use. After all, if we gave you a roof tool, you'd just make a roof. But because we give you the right drawing tools, you can create anything under the sun.

Model

From concept to construction. Combine shapes and punch holes in objects, knowing that intelligent Boolean operations will let you edit the original shapes any time. Extrude 2D objects into 3D space, or create 3D models and then extract working drawings – eliminating redundant work. Then, bring the entire project to life with DenebaCAD's powerful rendering features, including gloss, transparency and reflectivity. With built-in QuickTime™ and QuickTime VR™, including anaglyphic settings (complete with red/blue 3D glasses), you can walk through a construction project before hammering a single nail.

Visualize

Meet the new kid. Try DenebaCAD for yourself. With its 60-day money-back guarantee and support for a wide range of file formats (including AutoCAD® DWG r12, r13, and r14), there's nothing to lose but time.

To order: 1.800.403.9663



If you own a competing CAD product, you can upgrade to DenebaCAD at a special price. Call us at 1-800-7-DENEBA (outside the USA 1-305-596-5644) or visit our web site at www.deneba.com for more information.



Top low-cost image editors sharpen your best shots

by Jim Heid

TWEAK IT

FOR SHUTTERBUGS WHO OWN Macintoshes, this is a wonderful time to be alive. The Mac has been a digital-imaging demon for years, but the key hardware—scanners, digital cameras, color printers—has been geared toward publishing professionals and priced accordingly. Today, you can buy a scanner, digital camera, and color printer for less than \$1000 (see the features “Scan It,” “Snap It,” and “Print It,” in this issue).

But hardware is only half the picture. No matter how great the image, there's always room for improvement—flaws to fix, colors to correct. To manipulate your images—resize and retouch, crop and color-correct—you need the right software tools. Most professionals turn to Adobe Photoshop for its unmatched editing features and support for four-color printing, but for the price, you could buy a scanner and a digital camera. Plus, it demands a fast Mac with plenty of memory and hard-disk space, and its learning curve is as steep as a San Francisco street. Besides, for routinely cleaning up scans and digital snapshots, Photoshop's industrial-strength capabilities are overkill.

Bantamweight Bargains

Fortunately, the mushrooming popularity of low-cost digital cameras and scanners has led to a corresponding boom in inexpensive imaging software. If you simply want to do some retouching, you may already have everything you need: many scanners and digital cameras include entry-level imaging software, most often Adobe PhotoDeluxe or Photoshop LE (for *limited edition*).

In addition to these standbys, numerous programs provide solid editing features but won't tax your budget, your Mac, or your brain. Some of these VolksPhotoshops even perform tricks that Photoshop can't, such as creating calendars and automatically fixing scratches. So here's a guide to stocking an economical imaging toolbox, along with a set of cheat sheets for the most common scanning and image-manipulation tasks. Even if you're an imaging professional, you might find a useful addition to your toolbox here.

I tested six imaging programs ranging from \$19.95 to \$149.95 (see the table “Imaging Software That Does More for Less”). The selection breaks down into these broad categories.

Programs That Wanna Hold Your Hand

A rogues' gallery of common flaws plagues digital photos, ranging from inaccurate color balance to scratches and dust. If you want software that fixes those for you, look at Adobe's (www.adobe.com) \$49 PhotoDeluxe 1.1, MetaCreations' (www.metacreations.com) \$49.95 Kai's Photo Soap 1.0, and PictureWorks' (www.pictureworks.com) \$129.95 HotShots 1.0. All three automatically correct flaws such as inaccurate color balance. All three also enable you to add special elements such as simulated frames, clip-art cartoons, and calendars to images.

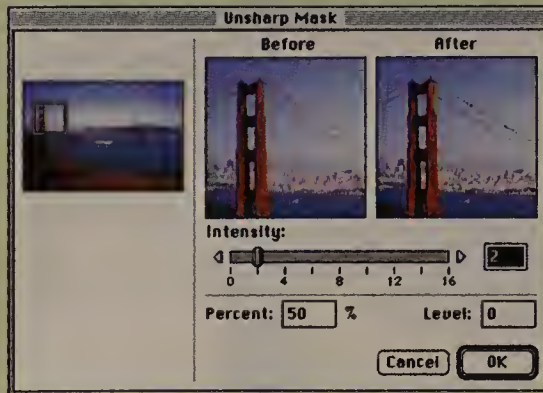
PhotoDeluxe operates in two modes: Guided Activities and On Your Own. In Guided Activities mode, tabbed windows walk you through image-repair jobs and design projects ranging from calendars to head replacement (always a favorite), in which the program helps you perform digital noggin surgery. On Your Own mode is aptly named: it provides a solid subset of Photoshop's features, but when you use them you're truly on your

Scanning Photographs

BEFORE you even switch on your scanner, make sure its glass scan bed is spotless. You'll get a sharper scan with fewer flaws to correct if you first wipe down the scanner with glass cleaner and a soft, lint-free cloth or paper towels. Be sure the glass is completely dry before positioning your photo.

The first, and one of the most important, decisions you face when scanning involves choosing the appropriate resolution. The

scan's number of dots per inch (dpi) will affect the image's file size and can have an impact on the quality of the final product. See the table "What Resolution Should You Use?" for some expert guidelines on scanning images for various types of output. (In fact, why not cut it



out right now and post it somewhere near your scanner for easy reference?)

Fixing a Fuzzy Photo

To sharpen a fuzzy image, apply a sharpening filter immediately after the scan. Strangely, the best filter to use for this task is called Unsharp Masking, which most imaging programs provide. Experiment with its controls to find the best settings for the image. You've gone overboard if you see odd artifacts such as halos around the image's sharp areas. If that happens, choose Undo and try a lower value.

Inexpensive scanners sometimes yield fuzzy and speckled images, almost as though some-

own—few are even mentioned in PhotoDeluxe's colorful but slim manual.

Kai's Photo Soap is the kind of something-completely-different program for which MetaCreations is known. Forget standard tool palettes and dialog boxes—Soap's interface uses beautifully designed, photo-realistic tools and futuristic controls. But mastering this exotic interface is difficult and often frustrating, and Soap's manual is lean on details.

Soap has flashes of brilliance. You can selectively erase changes to an image, for

instance, and when you zoom in for fine detail work, the program inserts additional pixels to make the image easy to work with. But there are also lapses. Most notably, when you choose Quit, the program doesn't ask if you want to save changes. And Soap is not for lightweight Macs. It demands at least 12MB of free memory, and prefers 20MB. Even using a 200MHz 603e-based system, I found Soap's performance to be only acceptable. In contrast, both PhotoDeluxe and HotShots run on 680X0 Macs.

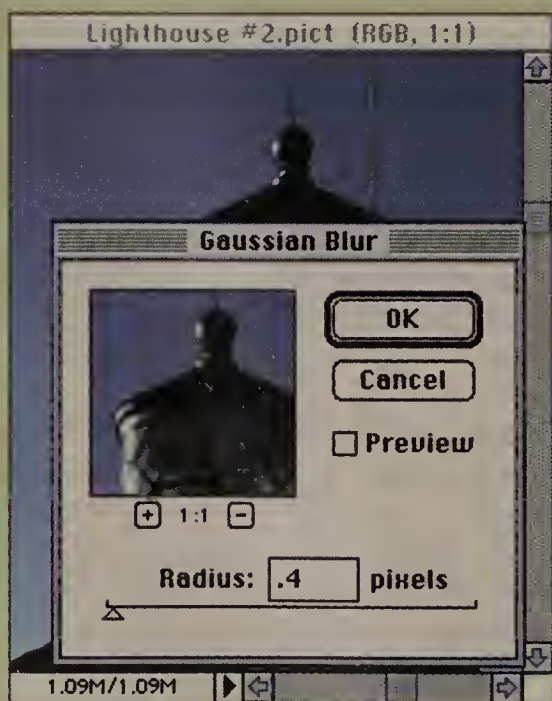
HotShots strikes a happy balance between hand-holding and power. Its SmartPix mode automatically enhances an image. First you specify what kind of device captured the image. (SmartPix supports dozens of digital cameras and scanners, and a plug-in system lets you add profiles as they become available.) Next, check a few boxes to describe the conditions under which the image was taken—indoors or outdoors, with or without flash, and so on. HotShots then adjusts the image's color balance and

Enhancing Digital Photos

Remove That Red-Eye

Red-eye occurs when light from a camera's flash reflects off the retinas of the subject's eyes, creating an unnerving reddish glow. One way to remove red-eye is to paint over it with an imaging program's paintbrush. (Zooming in first will make it much easier to see what you're doing.) Another way is to select the red areas using the program's magic-wand selection tool, and then change the color. Adobe PhotoDeluxe's Guided Activities mode has a red-eye-removal feature that uses this second technique.

Photo Soap and HotShots have terrific red-eye-removal



Gaussian Blur in Photoshop LE

tools—just paint across the red spots. Soap's tool even lets you colorize the eyes, changing them to brown, blue, or hazel.

Correct Color Balance

Photos taken under poor light-

ing conditions or under fluorescent lights may have an unpleasant color cast. HotShots has the best color-correction feature; Photo Soap does a good job, too.

Minimizing Artifacts

Images captured with digital cameras often contain compression artifacts where sharp edges meet (for example, a tree against a blue sky). You can minimize these artifacts by applying a slight blur to the image. The Gaussian Blur filter in Photoshop LE (and, of course, the full Photoshop version) does a particularly nice job; try blur values of 0.4 or 0.5. Your goal is to minimize the artifacts without making the image look out of focus.

2 Things You Should Do

Cropping

Improve the composition of an image by cropping out detritus that detracts from the primary subject.

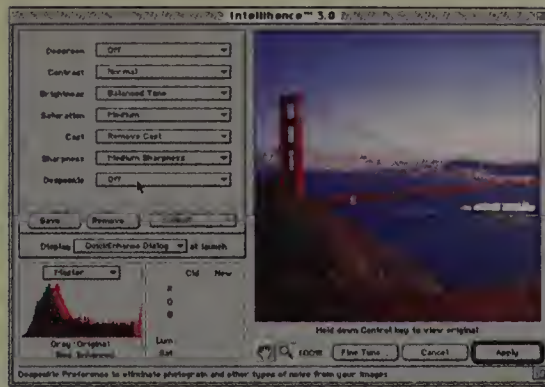
Cropping techniques vary from program to program. In Photoshop LE, select the cropping tool, then draw a selection rectangle that



Rather than place your subject dead-center, use the photographer's *rule of thirds*: divide your photo into thirds horizontally and vertically, and position the primary subject over one of the four intersecting points, as shown here.

one had sprinkled a dusting of cinnamon across them. And if you've scanned a photograph from a book or magazine, you will notice remnants of the image's halftone dots, which can produce unattractive moiré patterns when you print the image.

Speckles and flecks are often a form of scanner-induced noise—fluctuations in the light source, electrical interference, and so on. To remove these



Automatic Image Enhancement

As for those halftone dots in images scanned from publications, many scanner drivers provide *descreening* features that remove them. Extensis Intellihance also descreens.

unsightly distractions, use a despeckling filter; PhotoDeluxe, Photoshop LE, and Color It all

provide one. The despeckling operation smooths all of the image except for sharp edges.

intensity. Other operating modes let you tweak an image and apply special effects by choosing from small thumbnail views.

HotShots also has unmatched Internet links—it can launch your browser and take you to numerous photography-related sites and newsgroups. And Picture-Works' NetCard lets you e-mail digital postcards—voice-annotated, even.

Lean, Mean Imaging Machines

Perhaps you don't need hand-holding but are simply looking for an affordable,

approachable image editor that doesn't require a supercomputer to run. If that's the case, turn to MicroFrontier (www.microfrontier.com). No other company offers a broader range of reasonably priced, powerful image editors.

Color It 3.2 from MicroFrontier (\$149.95) is a remarkably capable editor that runs in as little as 1.4MB of RAM (Photoshop 4.0 requires more than 8MB). Color It provides a Photoshop-class array of tools and wraps them within an approachable interface. The program's

biggest gap is its lack of support for image layers, essential for combining images. (MicroFrontier promises that its \$349 Enhance 4.0, due to ship this fall, will support layers.) But Color It also has unique strengths, such as the ability to create and manipulate text directly on the image (rather than having to type it into a dialog box, as in Photoshop and PhotoDeluxe), and commands for creating image maps, used for Web-site navigation.

wwwArt 2.0 from MicroFrontier provides a streamlined set of features geared

If your destination is	scan at this resolution
a 300-dpi printer	100 to 120 dpi
a 600-to-725-dpi printer	150 dpi
a Web site	72 dpi

to Every Image

encompasses material you want to keep. (Fine-tune the selection's size by dragging its handles.) Finally, click anywhere within the selection. PhotoDeluxe and HotShots work similarly. In Color It, create a selection and then choose Crop To Selec-

tion from the Image menu. In Soap, use the crop bars in the Prep Room.

Retouching

This phase involves removing scratches and blemishes and perhaps even distracting elements,

such as the utility poles and wires that foul a beautiful view.

Most programs also provide a smudge tool, which is useful for blending cloned areas and smoothing imperfections. Pencil and paintbrush tools are valuable for detail work. To remove a

blemish using them, first use the program's eyedropper tool to pick up the color directly adjacent to the blemish, then paint over the blemish.

The preceding steps work in Photoshop LE, HotShots, and Color It.



The most useful retouching tool is the rubber-stamp tool, which enables you to copy, or *clone*, one portion of an image to another area. Activate the tool, point to the area you want to clone, and option-click on it. Then drag across the area you want to paint over, as illustrated here.

Characteristically, Photo Soap marches to a different beat. In addition to a clone tool, it has a heal tool that fixes scratches by pulling in pixels from adjacent areas. It works beautifully for areas in which there are no fine details—such as a scratch across a blue sky—but where details are present, the clone tool does a better job.

Imaging Software That Does More for Less

Company	Product	Star Rating *	List Price	Phone	Comments
Adobe Systems	PhotoDeluxe 1.1	★★★/5.5	\$49.00	408/536-6000	Some nice hand-holding features, but advanced modes are complex and completely undocumented.
EDITORS' CHOICE					
Extensis	IntelliHance 3.0	★★★★/8.1	\$99.95	503/274-2020	Image-enhancement plug-in for Photoshop, Photoshop LE, and PhotoDeluxe delivers outstanding results.
MetaCreations	Kai's Photo Soap 1.0	★★★★/7.5	\$49.95	805/566-6220	Has slick features and a gorgeous but complex interface—and demands a fast Power Mac.
EDITORS' CHOICE					
MicroFrontier	Color It 3.2	★★★★/7.6	\$149.95	515/270-8109	Bargain-priced image editor is fully featured yet runs well on low-end Macs.
	wwwArt 2.0	★★★★/7.1	\$19.95	515/270-8109	Simple, bargain-priced editor excels at making Web graphics.
EDITORS' CHOICE					
PictureWorks	HotShots 1.0	★★★★/7.7	\$129.95	510/855-2001	Combines excellent device-specific image-enhancement features with strong manual editing tools.

*Based on features, implementation, innovation, ease of use, and value. (See Star Ratings section for full explanation.)

toward producing Web-site graphics—for \$19.95 (that's no typo). You can create both client-side and server-side image maps (see *Media*, *Macworld*, July and August 1996). The Get Info command provides estimated download times; the Preview In Browser command automatically switches to your browser and opens the current image; and the HTML To Clipboard command creates the appropriate `` tag, complete with height and width attributes.

Janitor on a Disk

IntelliHance 3.0 from Extensis (\$99.95; www.extensis.com) is the one image-cleanup specialist I tested. A plug-in module for Adobe Photoshop, Photoshop LE, and PhotoDeluxe, IntelliHance doesn't fix isolated problems such as scratches or

red-eye; rather, it sharpens, color-corrects, and optimizes an image's overall appearance. Click on its Enhance Image button and then sit back and marvel. IntelliHance is a miracle worker.

Macworld's Buying Advice

The latest imaging programs make great results easier—and less expensive—to get than ever before. Which one is for you? Among the hand-holders, Kai's Photo Soap is a gorgeous, often-brilliant program that's also reasonably priced, but it isn't easy to learn and it demands a well-endowed Mac. Adobe PhotoDeluxe is a capable package, but its advanced features are difficult to use and it lacks PictureWorks HotShots' array of automatic fix-ups.

For a low-cost, all-purpose image edi-

tor, MicroFrontier's Color It is unbeatable. It eats RAM like a bird, yet it does everything most people need (except, as noted, support layers).

And if you already own Photoshop, Photoshop LE, or PhotoDeluxe, pick up Extensis's IntelliHance. There isn't a better way to automate your image-enhancement jobs. If Photoshop LE or PhotoDeluxe came with your scanner or digital camera, IntelliHance is an ideal add-on.

Pick up these tools and practice the tips and techniques you see illustrated here. You'll be well on your way toward picture-perfect pixels. **m**

Contributing editor and *Media* columnist JIM HEID's first imaging program was MacPaint, which he beta-tested before the Mac was introduced.

Preparing Photos for Web Publishing

PREPPING photos for the Web involves saving them in JPEG format, which compresses images for faster downloading. (GIF, the other popular Web-graphics format, isn't suitable for photos; see *Media*, May 1996.) Reducing the image dimensions also speeds download.

Save in a Native Format

Before compressing and resizing an image, save it in its native format—for example, PICT. But retain

a full-resolution, full-size version of the image for possible future use.

Resize

Generally, keep Web graphics under 400 pixels in either width or height—smaller is faster. Use your imaging software's Scale or Image Size command to resize. Be sure to maintain the image's original proportions, lest it appear stretched or squished. Most resize dialog boxes have a check box labeled Maintain Proportions or

Keep Aspect Ratio. Check this box, and you need enter a value for only one dimension; the program figures out the other.

Save as JPEG

JPEG offers several quality options, usually labeled Low, Medium, and High. Start at Low—results can be surprisingly good, and the space savings can be astonishing. If the image is unsatisfactory, return to the original file and try Medium.

EDITORS' CHOICE

Low-Cost Image Editors

★★★★/7.6 **Color It 3.2** This trim and efficient program provides solid editing features and runs well on slower Macs. **Company:** MicroFrontier (515/270-8109, www.microfrontier.com). **List price:** \$149.95.

★★★★/7.7 **HotShots 1.0** This versatile, approachable program combines direct support for numerous scanners and digital cameras with easy-to-use, effective image-enhancement features. **Company:** PictureWorks Technology (510/855-2001, www.pictureworks.com). **List price:** \$129.95.

Image-Enhancement Plug-In

★★★★/8.1 **IntelliHance 3.0** This Photoshop-format plug-in provides one-button image enhancement. **Company:** Extensis (503/274-2020, www.extensis.com). **List price:** \$99.95.

REAL PRODUCTS REAL RATINGS

Reviews you can trust Unlike other publications, *Macworld* rates only final shipping products, not prototypes. What we review is what you can actually buy.

XCLAIM VR

— it's five on the floor
plus a whole lot more from **ATI**



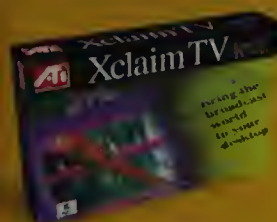
Finally, a product that lends more muscle to your PCI Mac. ATI's XCLAIM™ VR. It's five must-have graphics and multimedia functions revved up into one complete solution, giving you the power to conquer it all. Play, create, view, display or output 3D, 2D and video. This is full-out 3D acceleration, heart-stopping graphics performance, high-gear video playback, MAC2TV capabilities and more for just \$299*. See your dealer today, check out www.atitech.com, or call us at (905) 882-2600 (press 2 for faxback).



Add even more functionality with XCLAIM TV

Change the way you watch TV – forever. Now you can take advantage of the power of your Macintosh to revolutionize your TV viewing experience by adding XCLAIM TV to XCLAIM VR.

Watch television while you work, or enable a host of intelligent TV features, including 'Hot Words' monitoring, transcribing and favorite channel monitoring. Available now for only \$99**.



© ATI Technologies Inc., 1997. ATI, Xclaim and Now You See It are trademarks and/or registered trademarks of ATI Technologies Inc. All other product names are trademarks and/or registered trademarks of their respective owners. *Suggested (\$U.S.) retail price for 4MB upgradeable version. **Suggested retail price (\$U.S.).



MICRO CENTER

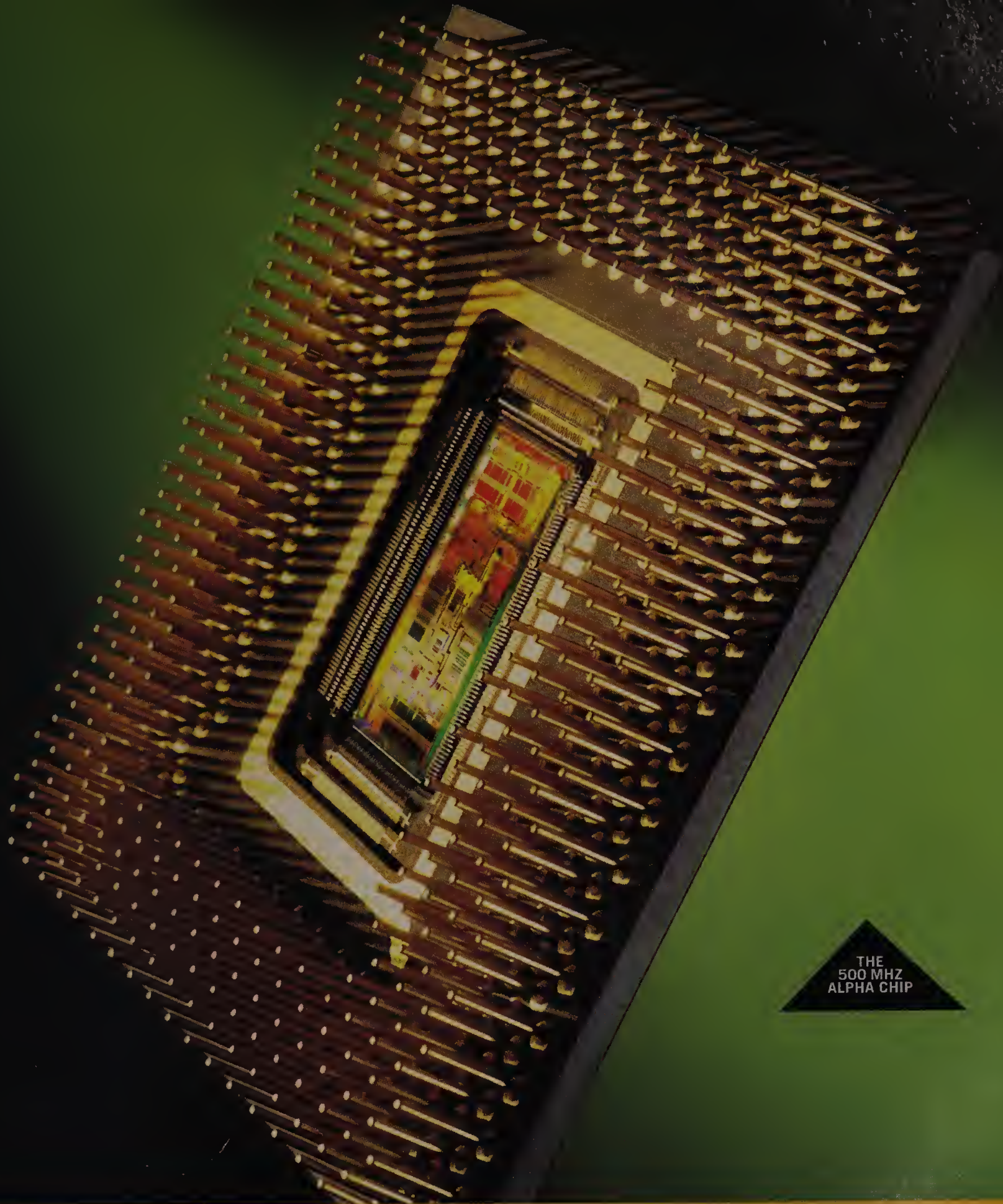


Now You See It.™



Circle 256 on reader service card

AT 500 MHZ,
WHIPLASH
BECOMES A
VERY REAL
POSSIBILITY.



THE
500 MHZ
ALPHA CHIP

The breakneck speed of a PC powered by an Alpha processor may take some getting used to. But you'll grow to love running your Windows NT® software on the world's fastest microprocessor. Alpha PCs run your favorite Windows® software too. And they're available, at competitive prices, from a variety of manufacturers right now. So hang on tight—and call (888) ALPHA-45 for details. Or visit www.alphapowered.com.

MICROSOFT
WINDOWS NT
COMPATIBLE

© 1997 Digital Equipment Corporation. DIGITAL, the DIGITAL logo and AlphaPowered are trademarks of Digital Equipment Corp. Mitsubishi is a registered trademark of Mitsubishi Electric Corp. Samsung is a trademark of Samsung Electronics Co. Windows and Windows NT are registered trademarks of Microsoft Corp.

digital™

 **MITSUBISHI**

SAMSUNG

Alpha processors are made by these leading technology companies.

Circle 120 on reader service card

AlphaPowered™

"Wow, this JADE scanner now costs less than \$500!"

And it comes with the world's very best color scanning software! When the JADE scanner cost \$895, it was considered one of the best price/performance scanners on the market. Now, we've reduced the price to under \$500. So it's unlikely that you'll find a better value anywhere.

Especially when you consider that the JADE comes with LinoColor™ VisuaLab™ EZ software. LinoColor software

technology is so good that it has been adopted by both Apple and Microsoft as the color standard for their operating systems. So why settle for just a scanner when LinoColor scanners deliver what you really want: great scans...at a great price.

For a free brochure call: **888-LINOCOLOR**. Or get it on the Web at www.linocolor.com



World's best color scanning software



See us at
Seybold SF
Booth
#933



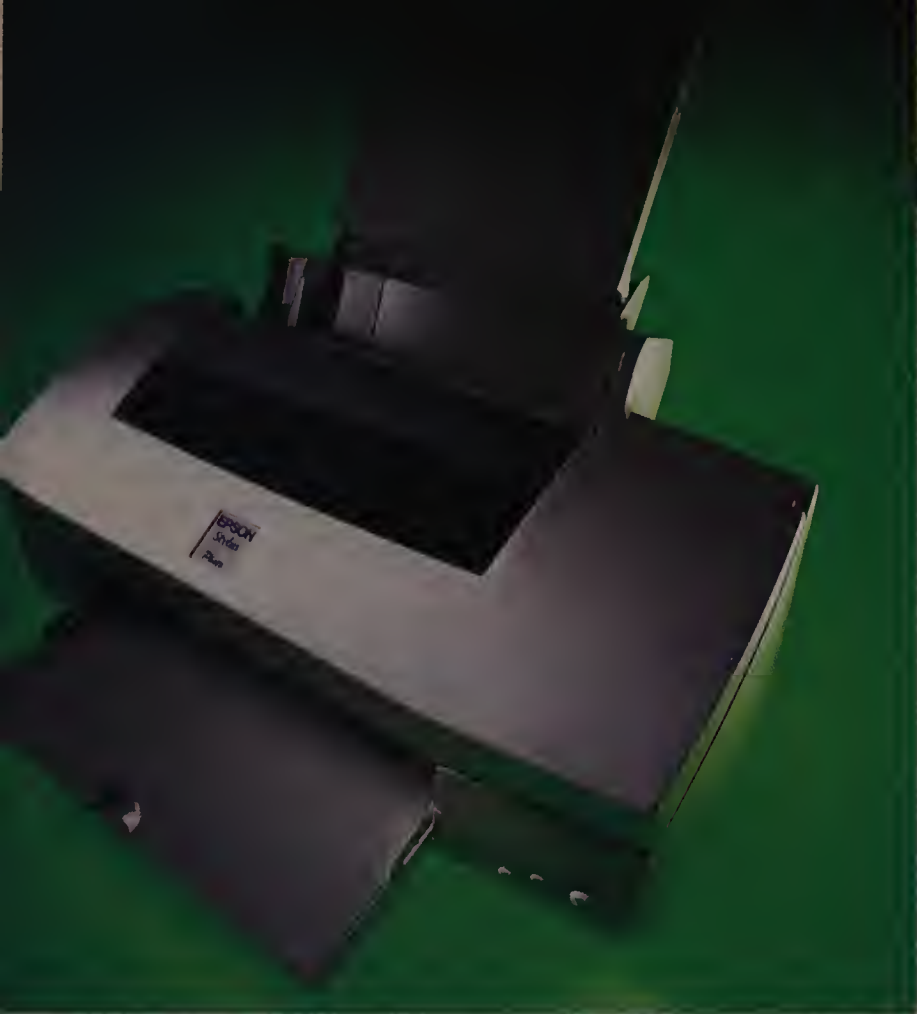
LinoColor
Color is child's play.

Linotype-Hell

©1997 Linotype-Hell. Hell and Linotype are registered trademarks; and LinoColor and VisuaLab are trademarks of Linotype-Hell AG and/or its subsidiaries. Apple and Macintosh are registered trademarks of Apple Computer, Inc. Microsoft and Windows are registered trademarks of Microsoft Corporation.

For Macintosh® or Windows®

Circle 17 on reader service card



9 color printers under \$500 deliver vibrant results

by Joseph Schorr

PRINT IT

YOU'VE CREATED GORGEOUS color images on your Mac—scanned in or captured with a digital camera. Now comes the budget-minded digital artist's biggest challenge: how to print those images so they look every bit as sharp and vibrant on paper as they do on screen—without spending thousands on a printer.

Surprisingly, the perfect solution may be a low-cost color ink-jet printer. Forget about the washed-out colors, fuzzy resolution, and messy ink smears of yesterday's ink-jets; the best of these compact personal printers can produce rich, dazzling color images at a crisp 720 or 1440 dots per inch, delivering output easily rivaling that of color laser printers.

Of course, these machines aren't as *fast* as laser printers, which can spit out up to five color pages per minute. They're also not PostScript printers, so to output Adobe Illustrator or Macromedia FreeHand files at high resolution you'll need additional PostScript-rendering software, which costs around \$100.

To find the best low-cost options for printing high-quality digital images, Macworld Lab tested nine color ink-jet printers,

all priced under \$500: Apple Computer's (www.apple.com) three newest StyleWriters; three outstanding printers from Epson America (www.epson.com); and new models from Hewlett-Packard (www.hp.com), Canon (www.csi.canon.com), and Alps USA (www.alpsusa.com). (The Alps printer technically isn't an ink-jet—it uses dry-ink ribbons, but it aims at the same market.)

First Priority: Quality

What counts most when you're printing color graphics, especially photos, is image quality. You want to see rich, accurate colors; smooth gradients; and sharp focus.

You get all of the above with Epson's ink-jets, which have redefined what we expect from these printers. The Stylus Photo in particular towered over its rivals in our Adobe Photoshop and Illustrator tests, with the clearest images and truest colors.

The Stylus Photo is the only ink-jet available that uses a six-ink system instead of the usual four-ink system. In addition to cyan, magenta, and yellow, it uses a light cyan and a light magenta ink to yield smooth transitions and more-accurate colors. You get rich, vibrant, photo-quality output, especially when you print on Epson's photo-quality glossy paper or its top-of-the-line (and expensive) glossy film.

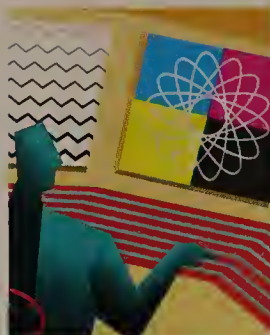
Epson's two other ink-jets, the Stylus Color 600 and 800, also rendered superior results in our quality tests, delivering sharp, clear prints with smooth color transitions and beautiful color. Both can print at a maximum resolution of 1440 by 720 dpi, but we didn't find the higher-resolution images much better than the 720-by-720-dpi ones. While both offer the same resolution, the 800 has more ink nozzles, a faster print engine, and a faster serial port for improved speed. The 800's separate black ink cartridge is also larger, so you don't have to replace it as often.

The Quality Challenge

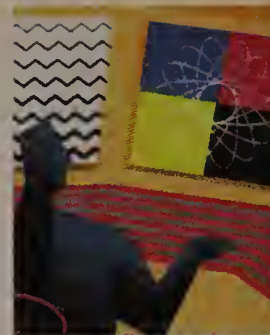
The Canon BJC-4550 and the Apple Color StyleWriter 4500 and 6500 also offer a photo-quality mode, but these, unlike the Epsoms, use special ink kits in place of standard ink cartridges. Switching from standard to photo-quality markedly improves these printers' output, especially when you print on glossy photo

Ink-Jets Deliver Top-Notch Output

We were delighted with the photographic-quality output that the newest ink-jet printers can produce. To compare output, we scanned two samples from each of the printers: an Illustrator file printed on plain paper using the printer's default setting and the same file printed on photographic paper using the printer's best setting. Notice how crisp the results are on the photographic paper, but remember this is a more expensive and time-consuming option. When shopping for a printer, insist on seeing output on plain paper using the default setting, since that's what you'll probably use more frequently.



Original Image For comparison purposes, here is the test Illustrator file sent directly to a 2400-dpi imagesetter, without the intermediate steps of printing on an ink-jet printer and scanning.



Plain Paper

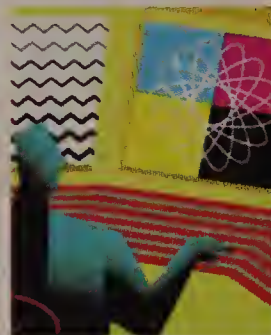


Photographic Paper

Alps MD-1000 The MD-1000's dry-ink ribbons produce washed-out, lifeless colors. This slow, quirky printer connects via a SCSI port and offers poor output on plain paper.



Plain Paper

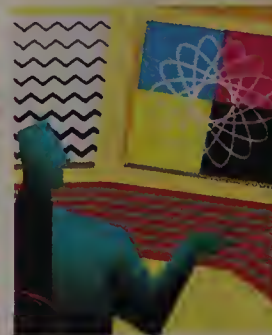


Photographic Paper

Canon BJC-4550 The BJC-4550 is the only tabloid-size printer in this price range, but it's slow. Special inks are available for photo printing, but the color banding and grainy output are disappointing.



Plain Paper



Photographic Paper

Epson Stylus Photo The Stylus Photo offers the smoothest color transitions, even on plain paper, thanks to its six-ink printing system. It produces the best photo-quality output available in this price range.

paper, but the results still couldn't quite compare to the Stylus Photo's images.

Remember, too, that the Stylus Photo is revved up for high-quality photo printing right out of the box; you don't have to buy special ink cartridges, and you never have to swap standard and photo ink cartridges, as you do with the StyleWriters.

The Alps MD-1000 dry-ink printer also claims to offer photo-realistic output at a resolution of 1200 by 600 dpi, but the

results were disappointing. The MD-1000 uses a system of four dry-ink cartridges resembling typewriter ribbons. In our tests, the cartridges sometimes left streaks on the pages. Also, images generally appeared washed-out, lacking intensity; blacks weren't very deep, and colors were dithered.

Unlike its costlier cousin the MD-2300, the MD-1000 doesn't use Alps photo-quality inks, whose dye-sublimation technology produces dazzling photograph-

ic results. To make matters worse, the MD-1000 did a very poor job on plain paper. This printer's one strength is text, which was razor-sharp on high-quality paper.

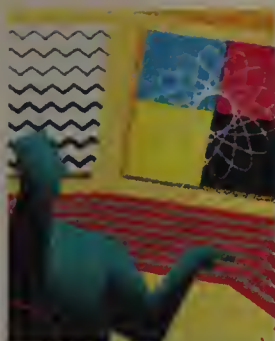
Better at Text

For printing black text on any kind of paper, the Hewlett-Packard DeskJet 870Cse is one of the best ink-jet printers; even in its default mode, the 870Cse produced better-looking text than all the

The Spectrum of Ink-Jet Options

Company	Product	Star Rating *	Price	MAXIMUM RESOLUTION (IN DPI)		MAXIMUM PRINT SPEED		COST OF INK CARTRIDGES	
				Black and White	Color	Black and White	Color	Black and White	Color
Alps 408/432-6000	MD-1000	★★★/5.5	\$399	600 × 1200	600 × 1200	240 characters per second	NP	\$6.99	\$6.99 each for cyan, magenta, and yellow
Apple Computer 408/996-1010	Color StyleWriter 4100	★★★/6.2	\$240	600 × 600	600 × 300	4 ppm	1.5 ppm	\$29.00	\$29.00
	Color StyleWriter 4500	★★★/6.9	\$340	600 × 600	600 × 300	5 ppm	1.7 ppm; 0.25 ppm PhotoGrade	\$29.00	\$29.00
	Color StyleWriter 6500	★★★★/7.7	\$470	600 × 600	600 × 300	8 ppm	4 ppm	\$29.00	\$29.00 (cyan, magenta, and yellow); \$35.00 (PhotoGrade)
Canon 714/438-3000	BJC-4550	★★★/6.9	\$499	720 × 360	720 × 360	5 ppm	1 ppm	\$29.99	\$49.95 (photo ink)
Epson 310/782-0770	Stylus Color 600	★★★★/8.9	\$299	1440 × 720	1440 × 720	6 ppm	4 ppm	\$24.95	\$29.95 (six-color)
	Stylus Color 800	★★★★/8.9	\$449	1440 × 720	1440 × 720	8 ppm	7 ppm	\$29.95	\$29.95 (six-color)
	EDITORS' CHOICE Stylus Photo	★★★★★/9.1	\$499	720 × 720	720 × 720	NP	3 × 5 photo, 90 seconds/8 × 10, under 6 minutes	\$24.95	\$24.95 (six-color)
Hewlett-Packard 408/571-2304	DeskJet 870Cse	★★★★/7.8	\$399	600 × 600	600 × 300	8 ppm (text)	4 ppm	\$32.95	\$34.95

NP = not provided. * Based on features, implementation, innovation, performance, reliability, ease of use, and value. (See Star Ratings section for full explanation.)



Plain Paper

Apple Color StyleWriter 4100 This low-priced printer gives you what you expect—mediocre output, mediocre speed. With no PhotoGrade option, its best output is crude compared to that of the other models.

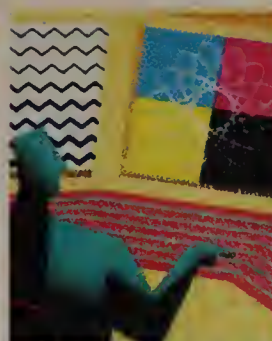


Photographic Paper



Plain Paper

Apple Color StyleWriter 4500 The 4500 offers vivid colors and improved text printing over earlier StyleWriters but produces crude color transitions and grainy output, especially on plain paper.



Photographic Paper

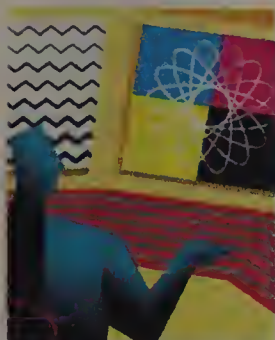


Plain Paper

Apple Color StyleWriter 6500 Apple's best StyleWriter produces decent photo output when you use the PhotoGrade ink cartridge. On plain paper, output is washed-out and grainy.



Photographic Paper



Plain Paper

Epson Stylus Color 600 The 600 delivers virtually the same great output as the Stylus 800, but it's slower and doesn't support the optional Ethernet upgrade. At less than \$300, it's an excellent value.

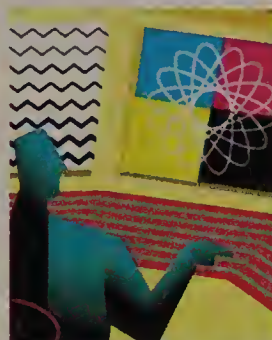


Photographic Paper

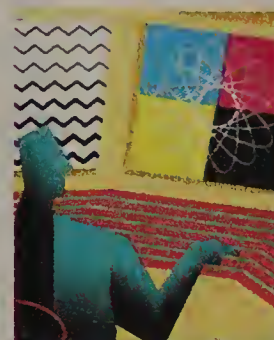


Plain Paper

Epson Stylus Color 800 Crisp edges, fine resolution, and rich color saturation make the Stylus 800 a great all-purpose printer. It's also got a speedy print engine and optional Ethernet support.



Photographic Paper



Plain Paper

HP DeskJet 870Cse The 870Cse is a fast and dependable printer for printing black text, but even on high-quality jobs image output is grainy, with poor color reproduction.



Photographic Paper

other printers in highest-quality mode.

The DeskJet 870Cse, the big winner when *Macworld* last tested ink-jets (see "Color Ink-Jet Jewels," February 1997), didn't fare as well this time around because its color output paled next to the photographic richness and clarity of the Epson printers' output. In Photoshop tests, for example, the DeskJet printout was relatively crude, with garish colors and lots of dithering.

Given that the newest StyleWriters are all built around Hewlett-Packard print engines, it's no surprise that their output closely resembles that of the DeskJet 870Cse. The 4500 and 6500 both did a great job on text—much better than the old StyleWriter 2500, which they replaced—but they produced less-than-stunning color images. Using standard (instead of PhotoGrade) inks, the 6500 managed to produce slightly better out-

put than the HP, though still inferior to any of the Epson printers'.

Speed—or Lack Thereof

Ink-jet printing is inherently slow; pages are printed line by line as a bulky ink cartridge and print head slide back and forth across each sheet of paper. You have to think in terms of minutes per page instead of pages per minute.

The fastest printer we tested, the Sty-

The Money of Color

YOU DON'T HAVE to spend a lot to set yourself up with a photo-realistic color ink-jet printer, but if you plan to do a lot of color printing, you'd better have a generous budget for paper and ink. Photo-quality output of this type comes at a price.

Don't Waste Ink

A \$24.95 color cartridge for the Epson Stylus Photo is rated to last 190 pages, but that's assuming you cover just 15 percent of each page (an area about the size of a floppy disk) with ink and that you print at just 360 dpi. Print a batch of 8-by-10 glossy photos at 720 dpi and the same cartridge may not last for more than 60 pages;

meaning that you use up 41 cents' worth of ink every time you print a page.

Printing with the Canon's small ink tanks can cost even more. The Photo Bubble Jet Cartridge runs \$49.95 and lasts for only about 90 pages—again, at only 15 percent coverage. On larger, color-saturated images, you could end up replacing the cartridge every 20 pages or so.

Hewlett-Packard's DeskJet 870Cse, with its larger-capacity ink tanks, is the most economical of the ink-jets we looked at. The DeskJet's \$34.95 color cartridge is rated to last for 450 pages at 15 percent coverage.

Spring for Paper

Then there's paper. All these printers support plain-paper printing, but to get photo-quality results you *must* spring for higher-grade ink-jet or photo papers, which cost considerably more than plain paper. Plain paper absorbs too much ink, resulting in fuzzier images and oversaturation that causes the paper to warp.

Epson's photo-quality glossy paper is about 65 cents per sheet. The photo-quality glossy film (for highest-quality prints) costs \$2.13 per sheet. Canon's high-resolution paper costs about 14.4 cents per sheet, while the high-gloss film runs \$1.40 per sheet.

Money-Saving Tips

Whenever possible, use these printers in their lower-resolution proofing modes, printing at 180 or 360 dpi instead of 720 dpi; you'll use a lot less ink. Switching simply involves choosing a different quality setting in the Print dialog box.

Also, do all your test prints and early proofs on plain paper instead of the higher-priced photo paper. (The printers have only one paper tray, but it's easy to swap paper.) The colors won't be as vibrant, but you'll get a good idea of what your final output will look like. The Epson printers again emerge as winners; they yield the best results, even when printing to plain paper.

Which Ink-Jet Is Worth the Wait?

As these test results show, there are two kinds of color ink-jet printers—slow and *really* slow. All of these printers keep you waiting, but only a few of them—namely, the Epson printers—make the wait worthwhile. The Stylus 800 generated some of the best-quality output and was also the fastest overall in default mode. While not as fast, the Stylus Photo produced superior photographic output in its best setting. On the other hand, the Canon BJC-4550 and Alps MD-1000 were losers all around, with slow print engines and disappointing output.

■ Best result in test. Shorter bars are better. Times are in seconds.

	Print Mode	Short Multi-font Memo	Long Single-Font Report	Spreadsheet	Illustration	Bitmapped Photograph	Newsletter	Web Browser
Alps MD-1000	Default	238	887	487	421	374	223	532
Alps MD-1000	Best	249	891	563	496	428	253	571
Apple Color StyleWriter 4100	Default	72	188	376	277	273	153	261
Apple Color StyleWriter 4100	Best	116	719	744	555	554	256	528
Apple Color StyleWriter 4500	Default	67	183	363	260	256	145	243
Apple Color StyleWriter 4500	Best	112	682	720	534	524	246	501
Apple Color StyleWriter 6500	Default	48	129	162	183	192	89	153
Apple Color StyleWriter 6500	Best	71	199	322	360	419	160	279
Canon BJC-4550	Default	65	272	311	302	337	123	273
Canon BJC-4550	Best	253	1948	1126	747	713	494	775
Epson Stylus Color 600	Default	48	321	159	102	93	61	104
Epson Stylus Color 600	Best	155	811	466	296	317	244	335
Epson Stylus Color 800	Default	27	159	159	70	67	44	64
Epson Stylus Color 800	Best	96	876	328	252	284	149	235
Epson Stylus Photo	Default	92	784	239	158	154	125	168
Epson Stylus Photo	Best	162	1568	491	328	387	249	373
HP DeskJet 870 Cse	Default	52	127	189	166	190	105	153
HP DeskJet 870 Cse	Best	93	185	358	258	331	183	273

Behind Our Tests

Macworld Lab tested the speed of each printer using a series of test files representative of typical home- and office-oriented jobs, including a ten-page Microsoft Word text-only document using one font; a two-page text-only Word file with multiple fonts, sizes, and styles; a Microsoft Excel spreadsheet; a ClarisWorks newsletter with multiple fonts plus PICT and EPS graphics; a Netscape Navigator Web page; an Adobe Illustrator-

generated graphic; and a full-color photograph scanned in Adobe Photoshop. All tests were performed on a Power Macintosh 7500/100 running System 7.5.5, with 32MB of RAM, a 256K cache, a 17-inch Apple monitor set to 256 colors, a disk cache set to 1024K, virtual memory and RAM disk disabled, and Adobe Type Manager 3.9 enabled.—Macworld Lab testing supervised by Mark Hurlow

lus 800, still took more than a minute to print one full-page color image at its highest speed. Printing in high-quality mode more than quadrupled that output time to over 4.7 minutes. The Stylus 600, which has a slower print engine and serial port than the 800, tackled the same file in about 5.3 minutes in high-quality mode.

The superior output of the Stylus Photo takes even longer to roll out of the printer; in our tests, a full-page color Photoshop document at the highest quality took nearly 6.5 minutes. And even with the Stylus Photo's high-speed (and lower-quality) setting, the same job took more than 2.5 minutes. That's slow—but not as slow as the BJC-4550, Alps MD-1000, or StyleWriter 4100 and 4500, which took even longer to slog through the same jobs. The BJC-4550, for example, took more than 11 minutes to output one page in our Photoshop test.

The DeskJet 870Cse, which delivered the fastest performance when printing text, offered middle-of-the-road speed on high-quality color jobs. The StyleWriter 6500 also sped through text jobs but couldn't keep up with the Epsoms when printing images from Photoshop or Illustrator.

Speed should be a secondary concern

when you're selecting an ink-jet to output your images. What you're really looking for in this type of printer is sharp, vivid output with good color fidelity. Every one of these printers kept us waiting, but in the case of all three Epson printers, the wait was always worthwhile.

Macworld's Buying Advice

For the best photo-quality output from an ink-jet printer, buy the Epson Stylus Photo. Considering this printer's \$499 price tag, the print quality is truly dazzling. It's not the fastest color ink-jet—that distinction belongs to its cousin the Stylus 800—but it's not the slowest either, and its output is truly spectacular.

Printing black text is a job that most of these color ink-jets don't do all that well. If crisp, black text is your main concern, the HP DeskJet 870Cse and Apple StyleWriter 6500 are your best options.

For a good balance of color quality, crisp text, and speed, your best bet is the \$449 Stylus 800, which renders excellent color images, ranks close to the top on text quality, and has the speediest print engine. If you can live with slower performance, opt for the Stylus 600; it delivers the same

output and saves you another \$150.

The bottom line: You really can't lose with any of the Epson trio—they all provide superb low-cost solutions for turning the images you've created on screen into genuinely dazzling prints. **m**

Contributing editor JOSEPH SCHORR, a veteran ink-jet user, bought the original StyleWriter six years ago. He coauthored *Macworld Mac Secrets*, fourth edition (IDG Books Worldwide, 1997).

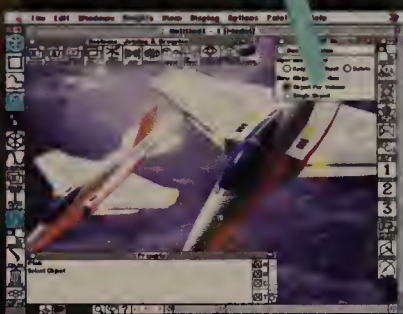
EDITORS' CHOICE

★★★★/9.1 Epson Stylus Photo It's slower than the similarly priced Stylus 800, but its photo-quality output produced gasps of delight from our panelists. **Company:** Epson America (310/782-0770, www.epson.com). **Company's estimated price:** \$499.

REAL PRODUCTS REAL RATINGS

Reviews you can trust Unlike other publications, *Macworld* rates only final shipping products, not prototypes. What we review is what you can actually buy.

3D solid and surface
modeling at its
best ...



Henk Dawson,

of Dawson 3D, Inc., Seattle, Washington, is a seasoned professional in the 3D medium, combining his love for both art and technology. After working at two Seattle area ad agencies, he went on to start his own business and for the last seven years, he has been creating 3D imagery for clients such as Apple, CompuServe, Fox, IBM, Microsoft, Nintendo, and Sun. Through the advancement of the digital tools available his illustrations have become significantly richer and more complex than anything he could create with traditional means. How does he do it?

Software programs, such as form•Z, enable me to create complex models which I can then incorporate into my photorealistic imagery. I find form•Z to be a powerful program with well implemented tools for creating simple to complicated shapes. I especially appreciate the fast screen redraws which bring much needed spontaneity into the digital creative process. I used to work with several modelers to get my project accomplished, but now I use form•Z for just about everything. I am impressed with the company's commitment in assisting their users, and in staying on the leading edge of the modeling technology.



See for yourself:
download a demo for
MacOS or Windows from
our web site at
www.formz.com.

As a designer, you need to visualize complex forms and to imagine shapes that do not yet exist. You frequently race against insane deadlines, while your clients grow impatient. That's when you need the modeling power of **form•Z**.

form•Z lets you create a vast variety of forms with unprecedented ease. It offers an extensive array of unique 2D and 3D form sculpting capabilities.

Grow a model from simple lines to complex **surfaces** or to true **solids** with a few quick clicks.

Shape curved **splines** or **NURBS** surfaces as you slip effortlessly between 2D and 3D views.

Resize your shape, **stretch** it, **extrude** it, **lathe** it, **sweep** it, **project** it, **unfold** it, **deform** it, apply advanced vertex and edge **rounding** to it.

Use **metaformz**, smooth **meshing**, image based **displacements**, or multi-source multi-path **skinning** to create smoothly blended **organic** forms.

What's more, **form•Z's** Boolean operations work even better than those found on pricey workstation level modeling packages.

Add as many **layers** as you need, work with floating point **precision** using simultaneous **graphic** and **numeric** input. If you're unhappy with your new design, **unlimited** **undos** are always at your fingertips.

RenderZone

When you're done modeling, you can use **RenderZone's** state of the art shader technology to produce your photorealistic images at impressive speeds. Or you can transfer your models smoothly into your favorite animation program, using **form•Z's** extensive import/export formats. Flexibility of this caliber has made **form•Z** the most effective modeling complement to many popular animation programs.

Now you can also produce **QuickTime VR** movies and view them from within **form•Z**.



autodesys^{INC}

Phone: (614) 488-8838

Fax: (614) 488-0848

Circle 49 on reader service card

THE DIGITAL CAMERA FRONT TO BACK.



Actual dimensions
of the D-320L are
5"(w) x 2.6"(h) x 1.8(d).
So it easily fits into
your pocket.

WAY OUT FRONT

Let's begin with the optics that give Olympus its renown. Here the D-320L exceeds beyond all counts. It has a five element all glass aspherical F2.8 autofocus lens with macro. Quite simply, this lens is equal to the lenses on our award-winning 35mm cameras. Put another way, this digital camera consistently produces higher quality images than other digital cameras, even some with higher resolution.

Also worth mentioning: a four mode flash with red-eye reduction; auto white balancing; and manual exposure controls allowing you to compensate for light conditions.

WE WORK OUR PIXELS HARDER THAN ANYONE ELSE

Our resolution: never produce a high resolution camera without giving the pixels something to do. Our resolution is 1024 x 768 pixels and all 810,000 of them have plenty to keep them occupied. The key is our sophisticated imaging system: the multiple compression ratios that give you a choice of both image quality and size as well as the color management system that rewards you with rich, vibrant images.

The result:



every one of
our pixels earn their keep.

SHOOT, SHOOT, SHOOT

There are no restrictions on the number of photos you can capture with the D-320L. The 2 megabyte

SmartMedia™ card that comes with the camera (4MB optional) has an unlimited capacity. You just simply download the images from the card to your computer by means of the serial cable or the optional PCMCIA or 3.5" floppy disk adapters. Or you can insert a new card anytime and keep on shooting.

NO COMPUTER NECESSARY

For those who don't want to be married to a computer day after day, there's emancipation. The D-320L has video output that directly hooks to your TV. The entire family can now view your shots without the need for a computer. And the images can be videotaped on a VCR and sent to relatives or business associates.



Hook up the D-320L to the TV and watch your shots come to life.

Another direct connection is from the camera to the new Olympus P-300 personal photo printer. In a little over a minute you can print true photo quality images directly from the camera. Finally, digital independence!

OUR REVEALING BACK

It tells you a lot. For one thing, there's the new 2" screen that displays real images in brilliant color. You can use it as a viewfinder or to review your shots one at a time or nine at a time. Or use it to present a slide show by automatically displaying each image one at a time. And if stop action inspires you, the D-320L can capture 9 shots per second in a single frame.



Connect the camera to our photo printer and presto! Get the photo you want, when you want it.

A FEW FINAL BYTES

Note: our more economical D-220L, with a resolution of 640 x 480, is ideal for smaller images (snapshots, the web, electronic presentations) and still gives you all the features and image quality of the D-320L.

Note: last year's Olympus digital cameras won more awards than any other digital cameras. Just imagine what this year will bring.

We've exposed the digital camera front to back. Now you should see for yourself how rich and sharp our images really are.

Visit us at www.olympus.com.

Or call us at 1-800-622-6372 and we'll answer all your questions.



Your computer, our camera and software. Now crop, enlarge, enhance, retouch, have fun.

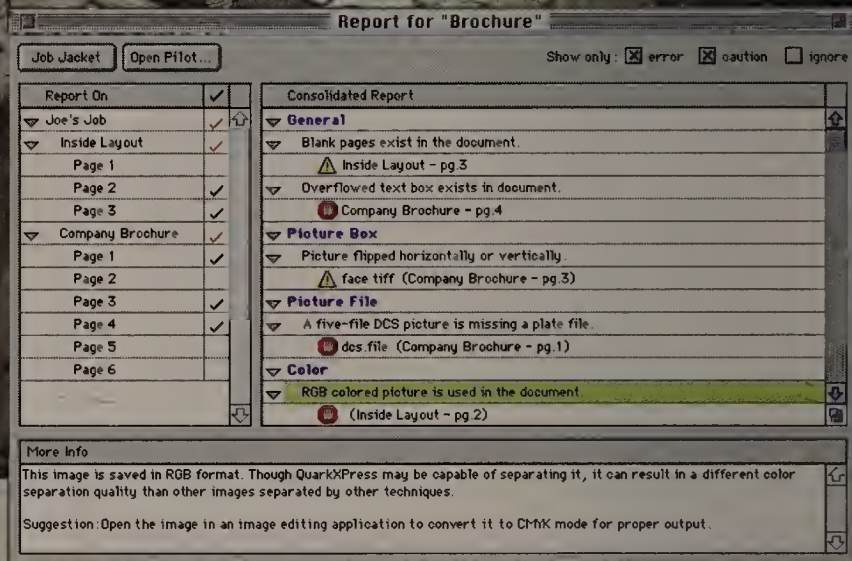
OLYMPUS®

THE ART AND SCIENCE OF IMAGING™

PREPRESS WASTE IS A PARASITE THAT FEEDS ON YOUR BOTTOM LINE.

KILL IT!

COMPETITIVE UPGRADE!
FLIGHTCHECK USERS
UPGRADE TO EXTENSIS PREFLIGHT PRO
FOR ONLY \$199.95!



EXTENSIS PREFLIGHT PRO 1.0
FOR QUARKXPRESS

MACINTOSH

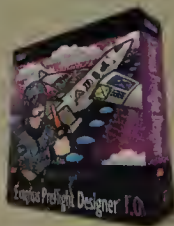
\$399.95



EXTENSIS PREFLIGHT DESIGNER 1.0
FOR QUARKXPRESS

MACINTOSH

\$99.95



EXTENSIS PREFLIGHT PRO™ AND EXTENSIS PREFLIGHT DESIGNER™, PREFLIGHT DONE RIGHT.

Extensis Preflight Pro and Extensis Preflight Designer are the new advanced prepress solutions that identify and solve work flow problems before they cost you time, materials and money.

They work the way you do. The Job Jacket tracks everything you need to know about your projects. Custom profiles identify the "showstoppers" you want to eliminate. Then the Preflight Pro Pilot works like a spelling checker right in your QuarkXPress documents to track down

Circle 13 on reader service card

problems and provide intelligent solutions. Finally, collect every element of your job to ensure error-free output. Find out why the Seybold Report says "Preflight Pro is certainly the best tool for preflighting QuarkXPress files." Squash prepress waste with Extensis Preflight Pro and Extensis Preflight Designer.



DOWNLOAD A FREE TRIAL VERSION OF
EXTENSIS PREFLIGHT PRO OR
EXTENSIS PREFLIGHT DESIGNER

<http://www.extensis.com>

1.800.796.9798

Extensis Corporation 1800 SW First Avenue, Suite 500, Portland, OR 97201 • Phone (800) 796-9798 • (503) 274-2020 • Fax (503) 274-0530
Extensis Europe, Zaventem 34, 3050 CB Mellebeke • The Netherlands • Phone +31-20-24-75050 • Fax +31-20-24-12039
Extensis and the Extensis logo are registered trademarks and Preflight Pro and Preflight Designer are trademarks of Extensis Corporation. QuarkXPress is a trademark of Quark, Inc. Macintosh is a registered trademark of Apple Computer, Inc. All other trademarks are the property of their respective owners.

Secrets

The List View Scandal of '97

CONTROVERSIAL CHANGES MAKE MAC OS 8'S FINDER BETTER—AND WORSE

by Joseph Schorr

You'll hardly notice one of the most dramatic changes introduced in Mac OS 8 when you first start using the new system software. It's not the obvious stuff—not the 3-D icons, or the beveled platinum-colored windows, or even the spring-loaded folders and pop-up windows.

No, it's the strange new way that Finder 8 handles list views. You zip around your system, merrily opening and closing windows, when suddenly it hits you: there's no longer one set of preferences that controls every list view on your Mac. Now each and every window on your system has its own list-view preferences (set via the View Options command in the Finder). Depending on whom you ask, this fundamental change is either a long-awaited refinement or a system-hobbling backward step.

Upgrade or Downgrade?

Some users find it positively liberating that at last you can apply view preferences on a window-by-window basis. It means you can turn on Calculate Folder Sizes in a single window—and keep it turned off everywhere else. You can show the Labels column only in windows containing files that are actually labeled, and keep the column neatly hidden in windows where it isn't needed. You can set up one window to display only the creation date of each file, while another win-



dow shows only the modification date. Just think: unparalleled freedom. Unparalleled flexibility.

And unparalleled hassles, say the critics. The problem? What if you *want* to set such list-view options globally? What if you want *every* list view on your Macintosh to always display the smallest icons, the modification date, and the size and label fields; and you want Calculate Folder Sizes always turned on? There's no way to do it. Apple forgot to include a command for setting global preferences. I've already heard people pining

for System 7.6, longing for happier days when they could set such preferences once and for all. Instead, try these tips for taking advantage of Mac OS 8's new approach to list views—and coping with its deficiencies.

The Three Rules

Actually, you have more control over Mac OS 8's list-view settings than you might think. The trick is understanding how these options work and how to make them work for you.

continues

EVER SINCE THE EARLIEST DAYS OF SYSTEM 7, YOU'VE BEEN ABLE TO include the comments that appear in each file's Get Info box in the Finder's list views—but almost nobody ever has that option turned on. For one thing, almost nobody actually uses the comments field. And until now, turning on the Comments field in list views activated the field in every list view on your Mac.

However, with Mac OS 8's window-by-window approach to list views, you can display comments in specific windows only. To make the comments visible, just select the Comments check box in the Show Columns section of the View Options dialog box (see Figure 1).

Including comments makes a lot of sense if you save files from the Web. Whenever you save an HTML document as a text file, Netscape Navigator automatically places the document's complete URL into the comments field. If you set up a list view that includes comments, you'll be able to see at a glance the origin of each file you've saved. You can also use comments to provide easily accessible notes and reminders about your files (see Figure 2). And because you can type anything you want into the Comments field, you can also use the Comments column to create a custom sort order for a particular window—without having to modify file names with leading spaces or returns. Just type a number or letter in the Comments field of each file's Get Info window, then click on the Comments column header in the Finder window to sort the files by the numbers or letters you've typed.

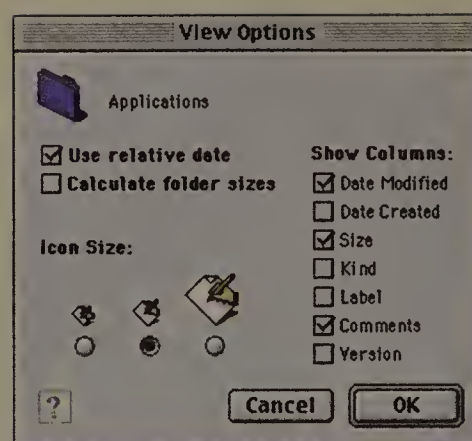


Figure 1

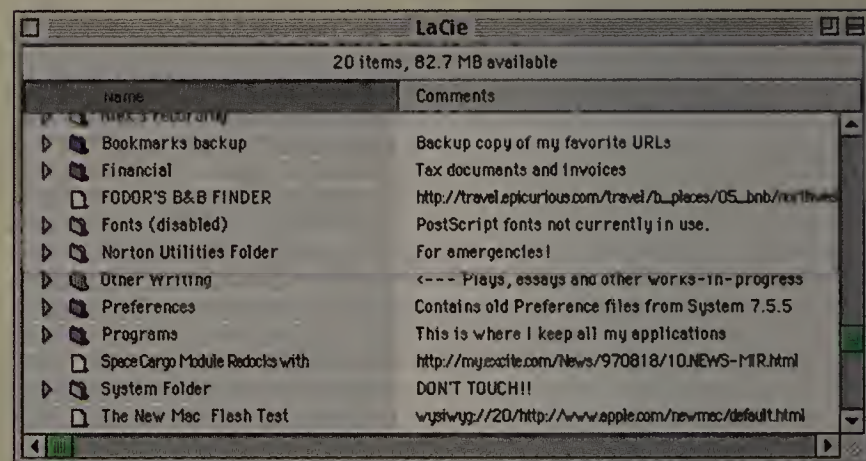


Figure 2

First of all, get to know the three underlying rules that govern the behavior of list views in the Mac OS 8 universe.

- There is one default list view hardwired into Mac OS 8: files appear with a medium icon; Calculate Folder Sizes is turned off; Use Relative Date is turned on (Today and Yesterday, instead of Tuesday and Monday); and three columns are displayed in addition to the file name—Date Modified, Size, and Kind. If you change an existing window from the icon or button view to the list view for the first time (that is, you've *never* displayed the window in list view before), then this default list view is what you'll get.

- Once you change a window's list-view options—adding or removing columns, selecting a different icon size, and so on—the Mac stores these changes *permanently*, even if you switch the window back to an icon or button view. In other words, if you change a window from an icon view to a list view, the list-view options you get will be exactly the same ones you set up the *last time* you opened that window in a list view.

- Finally, there's the all-important rule of List View Inheritance: New fold-

ers *always* inherit the list-view settings of their parent (enclosing) windows—columns, icon sizes, sort order, everything. (This is true even if the parent window is set to display an icon or button view. When you switch the newly created folder window to list view, the list will have the same list-view options that the enclosing folder had the last time *it* was displayed in list view.) The bottom line is that a new folder will always have the list-view characteristics of the folder in which it was created.

Equipped with the three rules stated above, not only can you predict what will happen when you switch to a list view, but you can also pretty much control what that view is going to look like. For example, knowing that a new folder inherits the list view of its enclosing window, you can in effect create a default for new folders. Just set up your hard-drive window with the list-view options of your choice; from then on, every folder you create from that window will possess exactly the same list-view options. The key is to set your preferences right away—before you've created hundreds of folders and subfolders.

Life with Lists

Granted, this isn't quite the same as having global settings that apply these preferences to all windows—both existing and new—in one step. On the other hand, you shouldn't have to set list-view preferences for each individual window on your system if you create new folders with these rules in mind.

Remember that Mac OS 8's new contextual pop-up menus eliminate at least some of the drudgery when you need to reset a window's view options. In the old days, changing views and view options meant visiting the Finder's View menu and opening the Views control panel. Now, you can simply control-click on a window to access a pop-up menu that lets you switch between icon, button, and list views, or choose the View Options command and make other adjustments. Let's hope that in Allegro, Apple's next Mac OS release, there will be a way to control list views individually *and* globally. **m**

JOSEPH SCHORR is coauthor of *Macworld Mac Secrets*, fourth edition (IDG Books Worldwide, 1996). He is a compulsive list-view user.

ix3D™

Why the race for ultimate graphics acceleration is over.



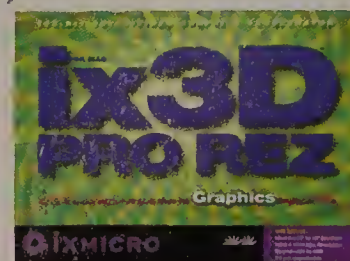
Pick up any computer magazine and you're sure to see the hype about 3D acceleration. And amidst the 3D buzz are umpteen companies clamoring to sell you their graphics card, with promises of "greater speed," "deeper colors", and a graph that supposedly proves their claim. But deciphering the difference between one card and another requires a magnifying glass, a dictionary and a degree from MIT.

Until now. Until ix3D, from IXMICRO. Extremely fast and elegantly balanced accelerators for graphics users of all types. The team at IXMICRO has been developing some of the world's most powerful accelerators since the birth of the personal computer industry. Mac users know us for the award-winning TwinTurbo, one of the fastest 32-bit true color graphics accelerators ever for the Macintosh. Now we're pleased to introduce ix3D, based on our latest 128-bit controller, the TwinTurbo 128-3D. ix3D is the first 128-bit accelerator family to deliver both professional performance and consumer value.

We created ix3D with two primary goals in mind: first, to provide the most powerful balance of professional 2D, 3D, and video to support today's intense visual computing trends. And second, to simplify the process of understanding, choosing and affording a graphics accelerator that's right for your needs. With ix3D, we bring you three unique products, each offering a new dimension in absolute graphics performance.

ix3D cards are designed with your applications and monitor resolutions in mind. So if you need to work with fast refresh rates at extreme resolutions such as 1920x1200, we have ix3D Ultimate Rez for you, a board with sophisticated VRAM. On the other hand, if you're like many graphics professionals who typically work at moderate resolutions like 1024x768 or 1280x1024, we offer ix3D Pro Rez with SGRAM, a powerful yet less expensive memory specifically designed for your performance and resolution requirements. And finally, for those gamers who want exhilarating 3D action without sacrificing faster 2D performance, we've created ix3D Mac Rocket, the first 128-bit graphics board for the Macintosh consumer market.

So be wary of clowns, screaming baldies, exploding eyeballs and those hard-to-read matrix charts that present only one side of the story. Simply look for ix3D. There's sure to be one that's perfect for you at your favorite reseller. You'll be impressed. End of story.





Tim said, “100% Pure JavaTM programs give us the latest data from our intranet. So we can all work faster. We can have our products in the stores sooner.”

“And we can kick our rivals in the bottom!” said the boss.

Tim and the boss laughed.

“Ha, Ha, Ha!”

mul·ti·plat·form ac·cess

to·tal da·ta shar·ing

en·hanced pro·duc·tiv·ity



Pure and Simple.

*To see how leading banks, freight carriers and telecom firms use
100% Pure Java, visit <http://java.sun.com/100percent/benefits.html>
or simply call us at 1-800-JAVASOFT.*

BREWED BY



Circle 48 on reader service card

FREE
WITH PURCHASE
GRAPHICS • PLUG-INS
LEARNING CD's
@www.adobe.com/actionpack/print.html

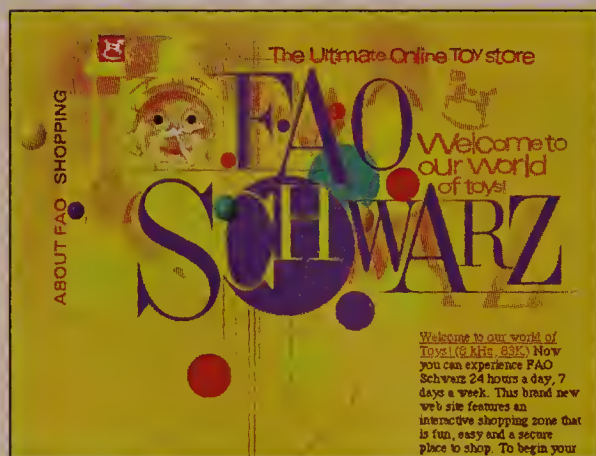
It's easy to see how ADOBE® PHOTOSHOP® *improves your* WEB SIGHT.



www.dia.org



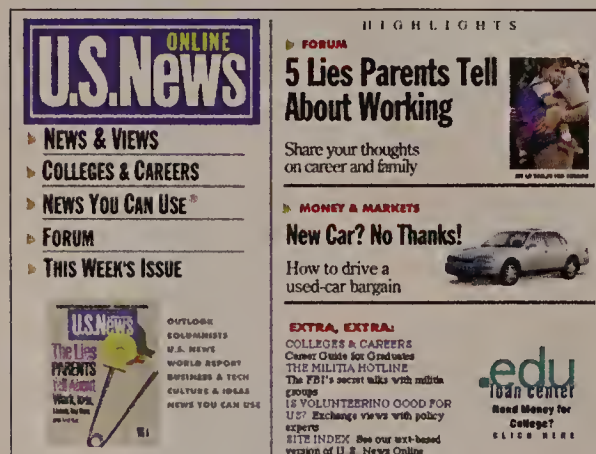
www.porsche-usa.com



www.faoschwarz.com



www.ebauer.com



www.usnews.com/usnews/main.htm



www.americanfunds.com

Seeing is believing. Adobe® Photoshop® 4.0 is the world's leading image editing tool for web graphics. The sites on your left are proof.

With our new Actions feature, U.S. News can



easily batch process hundreds of images. The Detroit Institute of Arts appreciates how Photoshop supports all the most popular web files, like PNG, Progressive JPEG, GIF89A and PDF. And to make the creation of great-looking sites easier, award winners like Porsche make good use of all our precision tools, including Grids and Guides. For more information, contact us at 1-800-492-3623, offer code 35613, or visit www.adobe.com.



Free Adobe ActionPack with purchase of Adobe Illustrator, Photoshop or PageMaker. Offer good on new retail units only, while supplies last. Not valid on upgrades or volume licenses. Not valid with any other offer. Adobe, the Adobe logo and Photoshop are trademarks of Adobe Systems Incorporated. FAO Schwarz website designed by Avalanche Systems. All other trademarks are property of their respective owners. © 1997 Adobe Systems Incorporated. All rights reserved.

Circle 253 on reader service card

Tips, Tricks, and Shortcuts

by Lon Poole

Everyone knows that to adjust the sound level in a QuickTime sound clip you click the speaker icon to reveal a sliding volume control. Do you know the shortcut for turning the sound on and off? Lucie

Robineau of Saint-Léonard, Quebec, Canada, has the answer: option-click the speaker icon. Also, you can set the sound level louder than its normal maximum by holding down the shift key while adjusting the sound level with the slider.

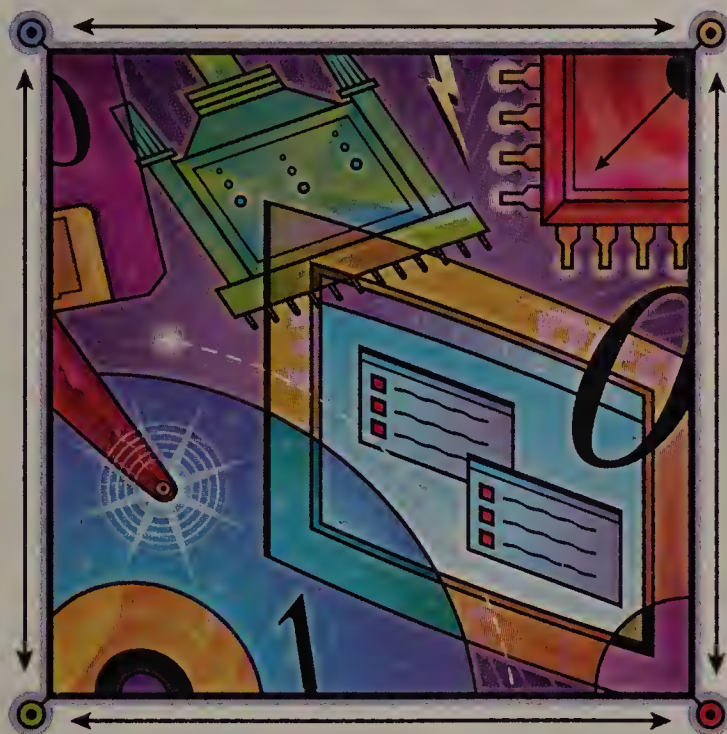
The QuickTime movie controller has several other hidden capabilities. You can select part of a movie by pressing the shift key while dragging or clicking the play bar, and then using the Cut, Copy, or Clear command in the Edit menu. After cutting or copying part of a movie, you can paste it anywhere in the same movie or another movie. To deselect your snippet of movie, ⌘-click anywhere in the gray bar. To play the movie backward, ⌘-click the reverse-step button. Control-click either step button to reveal a slider that controls the direction and playback rate. Option-click a step button to jump to the beginning or end of the movie, as indicated by the direction of the step button. To make your QuickTime movie an optimal size for playback, press the option key while dragging or clicking the size box.

Menu Pictures

Q How do I take a snapshot of my .desktop with a menu still open? I tried pressing ⌘-shift-3, but it won't take a picture until the menu closes.

KEITH CROSBIE
Santa Rosa, California

A Apple improved the built-in screen-capture capabilities with Mac OS 7.6 and 8.0, but didn't include the ability to capture a menu. You can take a picture of a rectangular region by pressing ⌘-shift-4 and then dragging to select the region. You can take a picture of a window in the active application by pressing the caps lock key and ⌘-shift-4, then clicking the window. To place the picture on the Clipboard instead of in a SimpleText picture file, add the control key to either of those key combinations (or to ⌘-shift-3 for a full-screen picture). Alternatively,



after pressing ⌘-shift-4 you can press the control key while dragging or clicking. To cancel a ⌘-shift-4 combination, press any key.

To capture a menu, you need a screen-capture utility such as the \$25 shareware Screen Catcher from St. Clair Software (www.stclairsw.com), the \$20 shareware Snapz Pro from Ambrosia Software (716/325-1910, www.ambrosiasw.com), or the \$49.95 program ScreenShot 2.5.3 from the Beale Street Group (901/751-9333, www.beale.com). All these pro-

grams can take a picture of the whole screen or a region you select, including a menu. They also have other capabilities.

ScreenShot is best for capturing multiple windows (including dialog boxes and palettes) and the menu bar, by itself or in combination with drop-down menus and dialog boxes. For instance, ScreenShot can capture just a Mac OS 8 window and its contextual menu or a dialog box and a pop-up menu that extends outside it. If you don't need to take cropped pictures of multiple objects, the other products are better buys. Snapz Pro can easily take a

cropped picture of a menu or one window. Screen Catcher can take a cropped picture of the frontmost window or an uncropped picture of a menu, and it gives you far more options than the others to change color palettes and file formats, including transparent or interlaced GIF or progressive JPEG with a standard Web color palette.

Less Cache Cleanup

Q When I am on the .Internet for a long period of time, eventually a message in the lower left corner

of the Netscape Navigator 3.0 browser window says "Cache cleanup: removing XX files," where XX may be between 30 and 80. How do I avoid that message or reduce the number of files? A Web page takes so much longer to load when a cache cleanup interrupts.

ERIC LAMB
Whitefish, Montana

A Experiment with Navigator's memory size and disk cache size. If you

continues

increase its memory size (with the Finder's Get Info command), Navigator relies less on its disk cache. If you reduce the disk cache size (with the Cache panel of Navigator's Network Preferences menu selection), Navigator tends to clean up fewer files at a time. Theoretically you could set the cache size to zero and Navigator would never have any files to clean up. However, the smaller the disk cache, the more often Navigator has to reload from the Internet, and that takes longer than cache cleanup. Setting Navigator's cache really high (say, 40MB or 50MB) means the browser can retrieve more Web-page elements from its cache instead of reloading them from the Internet and generally lessens the frequency of cache cleanup, but makes it take longer when it does happen.

Your Web-browsing habits affect how beneficial the cache is and how often Navigator cleans it up. If you hit a lot of new pages all the time, there's going to be a high turnover in the cache and you'd probably be happier with a smaller cache. If you mostly view the same pages and they don't change much, the cache turnover will be lower and a larger cache would likely benefit you.

Cache cleanup and all other cache operations speed up if you locate the cache on a RAM disk (see *Quick Tips*, April and July 1997, for tips on using a RAM disk for browser cache).

Get System Info

Q I have installed a 256K Level 2 cache on my Performa 6360, but I don't know whether it is working. Is there any way I can find out?

IZZY VASQUEZ
Albany, California

A Run the free program Cache-22, which is part of the Gauge series from Newer Technology (316/943-0222, www.newertech.com). The program reports which CPU your computer has, how much Level 1 cache is inside the CPU, and how much Level 2 cache is installed outside the CPU. Other Gauge programs tell you the clock rate at which the CPU is running, perform a quick test of your computer's RAM, and more (see "Show Me the Cache"). Other good sources of system information include TechTool from MicroMat (707/837-8012, [\[micromat.com\]\(http://micromat.com\)\) and Apple System Profiler. Profiler is part of a standard installation of Mac OS 7.6 and 8.0, and is in the CD Extras folder of the System 7.5.3 installation CD. An older version is available separately from Apple's software library \(\[www.info.apple.com\]\(http://www.info.apple.com\)\), but this version works only with Mac models made in the last couple of years.](http://www</p>
</div>
<div data-bbox=)

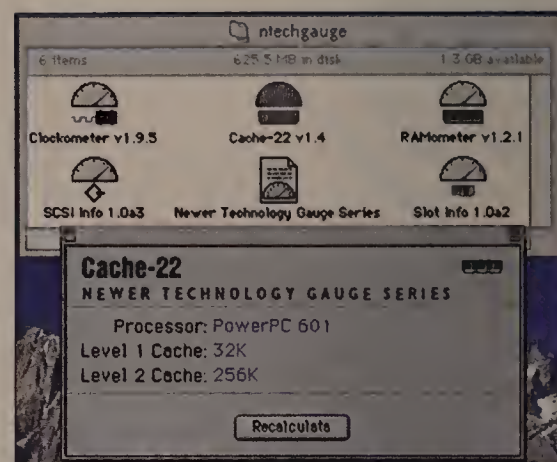
Replicate Field Format

TIP When you add fields to a Claris FileMaker Pro layout, it can be a hassle to respecify all the format attributes for each field—color, font, font size, date or number, and so on. By chance I discovered a way to automatically apply an existing field's format to a field you add. You press the ⌘ key while selecting the field whose format you want to copy, then drag a field from the field tool to the layout. The added field adopts most of the attributes of the field you ⌘-clicked. The formats not adopted include the size, field style (such as pop-up menu), and button attributes. This has saved me a lot of time.

JOHN PROKOS
Portland, Oregon

Audio CD Alert Sound

TIP For those who are a bit tired of the standard system alert sounds or who just love music, here's a way to record a new alert sound from an audio CD using the AppleCD Audio Player program and the Sound control panel. First you watch the AppleCD Audio Player while listening to the passage you want to record and note the track and time where the passage starts. Then use the Audio Player's controls to pause the CD a few seconds before the start of the passage. Make sure the Audio Player's volume control is all the way up. Next open the Sound control panel and display its Alert Sounds settings. If you're not familiar with the controls for recording a new alert sound, click the Add button to see them, and then click Cancel to put them away for now. Switch back to the Audio Player, start the CD playing, and without hesitating switch back to the Sound control panel and click the Add button. Click the Record button a split second before the beginning of the passage you want to record, and click the Stop button when



Show Me the Cache Download Newer Technology's free Gauge suite and check up on your Mac's Level 1 and Level 2 cache. Other components of Gauge monitor internal slots, RAM, SCSI buses, and bus speed.

you want it to end (a second or two for an alert sound). Finally, save the sound with a name you want.

FELIX BECCAR VARELA
Buenos Aires, Argentina

If your Control Panels folder doesn't contain a Sound control panel, see if you have a Monitors & Sound control panel with an Add button in the Alerts settings. (Newer versions of Monitors & Sound have the Add button.) If not, look for the Sound control panel in the Apple Extras folder on your start-up disk or use the SimpleSound program.

Before you can record from an audio CD, you may have to set the computer's sound-input source. If you use the Sound In section of the Sound control panel, click the Options button to bring up the Input Source dialog box, and there select Internal CD and turn on Playthrough. If you use the Sound section of the Monitors & Sound control panel, set Sound Input to Internal CD and turn on Listen.

Some older Macs can't record directly from an audio CD in the internal CD-ROM drive if anything is plugged into the sound-input (microphone) port. Affected models include the Quadra and Centris 610 and 650, Quadra 800, Mac IIfx and IIfx, and Performa 600CD.

For more control over recording short segments from an audio CD, use the freeware utility GrabAudio by Theo Vosse.—L.P.

Put Away after Quitting

TIP If you use Aladdin Systems' ShrinkWrap to create a RAM disk for a Web-browser cache (as described in April's and July's *Quick Tips*), there is a way to seamlessly integrate an

continues

Who wants some Wang?

NEW FROM THE CREATORS OF DUKE NUKEM 3D™

LO WANG IS SHADOW WARRIOR™ for Macintosh®

LO WANG IS COMING TO THE LAND OF
THE RISING SUN TO TURN OUT THE
LIGHTS. SHADOW WARRIOR.
THE ZEN IS GOING
TO HIT THE FAN.



WE'VE GOT A LOT OF ACTIVITY, BAGS AND
CLIPPING, AND WE CAN SPEAK THAN
DUKE NUKEM 3D.



SWIM, DUCK, JUMP, DRIVE VEHICLES,
CLIMB LADDERS, GO ANYWHERE DO
ANYTHING.



THROWING STARS, KATANAS, UZIS, BAR-
REL SHOTGUNS, RAIL GUNS,
GOREWEAPONS... THE BIGGEST, BADDEST
ARMORY IN GAMING HISTORY.



BUILT FROM THE GROUND UP FOR THE
ULTIMATE "WANG BANG," CHOOSE FROM
DEATHMATCH, CO-OP, TEAM PLAY OR
CAPTURE THE FLAG MODES.

Coming Soon!

800-229-2714

Call for a free catalog or visit our website at www.wizworks.com

Shadow Warrior™ 1997 3D Realms Entertainment, Inc. Lo Wang and his likeness are trademarks of 3D Realms Entertainment, Inc. All rights reserved. All other trademarks are property of their respective owners.

Created by



Mac conversion by



MacSoft®

A GT Interactive Company

2300 Berkshire Lane, Plymouth, MN 55441 612.509.7600

Circle 28 on reader service card

NEW VERSION 2.5 3D World + Designer



Michael Leckman
www.diamondschmitt.com/beta4.html

3D World for Presentations, Animations, QuickTime Movies, Web Design **\$149**
Designer plug-in pack for Interior Design, Architecture, CAD, Includes: Lightworks SuperLite Renderer. **\$149**

Order both 3D World and Designer for only **\$279**

To order any Microspot products:

1-800-622-7568



MacPlot

Low cost Large Format Color Plotting/
Printing from: **\$399**

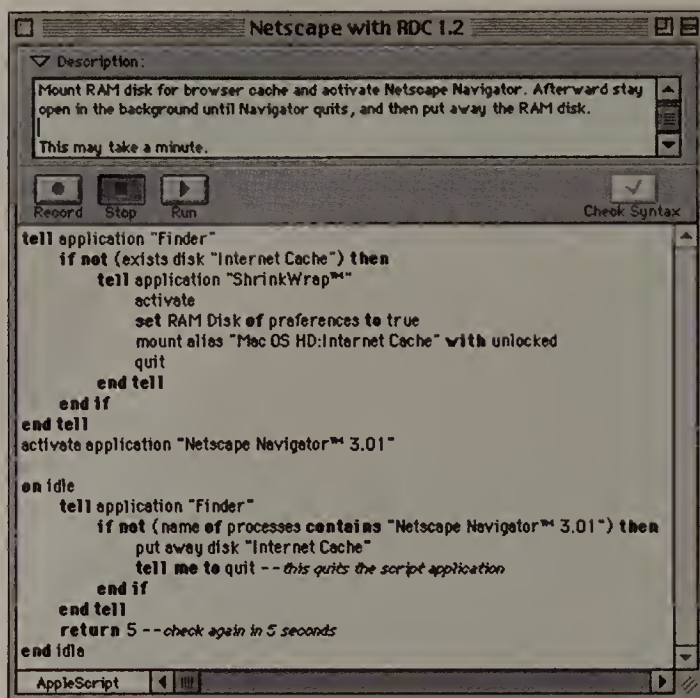
Other great Microspot products:
PhotoFix, MacDraft, and many more.
Call for a FREE CATALOG



Microspot USA, Inc. (408) 253-2000
Se habla español
Demo copies available - www.microspot.com

Come and see us in Booth #1937
at SEYBOLDSF

Circle 3 on reader service card



Extending a Quit Command This stay-open AppleScript application checks every five seconds to see if you have quit Netscape Navigator. When you do, the handler puts away the RAM disk that was used for the browser cache and quits itself.

AppleScript script that automatically puts away the RAM disk when you quit the browser. Bruce Sheplan of Ponce, Puerto Rico, suggests you modify the AppleScript application that mounts the RAM disk and launches the browser. You add some script commands, known as an idle handler, that periodically check to see if the browser is still open and put away the RAM disk if it's not, as shown in "Extending a Quit Command." To make the AppleScript application stay open in the background so it can monitor Netscape Navigator's status, you must turn on the Stay Open option when you save it.

You could also include a command that disconnects your PPP connection after you quit Navigator. For example, inserting the command **PPP disconnect** before the **put away** command would disconnect an Open Transport PPP connection before putting away the RAM disk. If you use the Control PPP for AppleScript control of FreePPP or MacPPP, the disconnect command is **ClosePPP**.

Start-up Chime Revisited

TIP A number of readers have contributed more ideas for turning down or silencing the start-up chime. Instead of plugging in headphones or an earphone as suggested in August's *Quick Tips*, Jeffrey Lomicka of Maynard, Massachusetts, plugs in a 1/8-inch flathead

nylon screw. He cut it to 5/8 inches in length and tied a string to the head to make it easy to remove. The screw is less bulky and quieter than headphones, and the flat head allows you to close the port cover on a PowerBook that has one. Be sure to use a nylon screw, not metal, so that you don't create a short circuit!

On a desktop computer with speakers in the monitor, David Mayfield of Anaheim, California, simply turns on the monitor a few seconds after starting up the computer. That happens automatically

with an AppleVision 1710AV monitor, since the monitor and its speakers don't turn on until the computer's ADB port comes to life, which happens after the start-up chime. Rick Casey of New York notes that if your monitor doesn't have built-in speakers, a pair of decent computer speakers, available for as little as \$50, will almost totally mute the start-up sound when turned off.

If you prefer a more automated approach, Addison A. Edwards of Alairac, France, suggests you create a couple of simple AppleScripts to turn down the sound level during shutdown and turn it back up during start-up. To turn down the sound, enter this one AppleScript statement in a new Script Editor document and save it in the Shutdown Items folder: **set volume 0**.

To turn up the sound, change the number in this statement to any value between 1 (lowest) and 7 (highest) and use the Save As command to save the modified script as an application in the Startup Items folder. You save a script as an application by choosing Application from the pop-up menu in the Script Editor's Save dialog box. For these scripts you should also turn on the option in that dialog box labeled Never Show Startup Screen; otherwise a dialog box will appear every time the script application runs.

Keep Netscape Offline

TIP Several readers contributed more ideas for keeping Netscape Navigator open but offline. In addition to using Navigator's General Preferences to

continues

REAL POOL™

There's nothing virtual about it.



Photo-Realistic 3D in Real Time



Includes these Real Pool games:

Straight•8-Ball•9-Ball•Rotation•Snooker•Spanish•Many more!

Play against the computer or challenge and chat with your friends over the internet.

Created by



Coming Soon to Retailers Everywhere!

800-229-2714

Call for a free catalog or visit our website at www.wizworks.com

System Requirements: Macintosh with a 68040 or higher microprocessor, 8MB RAM, color monitor and CD-ROM drive. Also accelerated for Power Macintosh.

MacSoft®

An affiliate of GT Interactive Software Corporation.
2300 Berkshire Lane No., Plymouth, MN 55441 • 612-509-7600
Call for a free catalog or visit our website at www.wizworks.com

Buy smart with Mac Superguide.

MACWORLD SUPERGUIDE

To buy smart when you're choosing a Mac OS computer, your best bet is to let Macworld be your guide. Check out the Mac Superguide in this issue — and every issue — for the latest and greatest in Mac systems. It's a comprehensive guide to every system on the market, meticulously reviewed and Star Rated, with our favorites highlighted with an Editors' Choice symbol.

With all the systems out there, you could easily get lost if you try to navigate them on your own. Don't risk it: trust the Superguide.

Macworld
THE ESSENTIAL MACINTOSH® RESOURCE

QUICK TIPS

set the Browser Starts With option to Blank Page, as suggested in September's *Quick Tips*, Marvis Collett of Salt Lake City, Utah, points out that you must not have the browser set to periodically check for e-mail. To disable automatic checking, choose Mail and News Preferences, and in the dialog box click the Servers tab and set the Check For Mail Every option to Never.

If you want to use a browser to preview a Web page without connecting to the Internet, Fred Sandsmark of Rocklin, California, suggests you simply drag the Web-page icon and drop it on an alias of the browser. He keeps aliases of several browsers on his desktop for this purpose. You could also put the aliases in the Launcher or in a Mac OS 8 pop-up window.

Desktop Folder Alias

TIP If you want to put an alias of the normally invisible Desktop Folder in your Apple menu so you can open items on the desktop from any application, but you can't make the alias from another network computer as suggested in September's *Quick Tips*, Robert DeVoe of Bloomington, Indiana, reminded me you can use the trusty utility program DiskTop from Prairie Group (515/225-3720, www.prgrsoft.com) to see and make an alias of the Desktop Folder. If you don't mind adding a system extension, Jason Mannell of Boulder, Colorado, points out that Now Menus does a pretty good job of exposing the Desktop Folder. The shareware control panel MenuChoice by Kerry Clendinning can also give you access to the Desktop Folder from the Apple menu, notes Dean Balmer of Albuquerque, New Mexico. **m**

LON POOLE answers readers' questions and selects reader-submitted tips for this monthly column. His latest book is *Macworld Mac OS 8 Bible* (IDG Books Worldwide, 1997).

Shareware mentioned in *Quick Tips* is available from Macworld Online (www.macworld.com) or America Online (keyword *Macworld*).

We pay from \$25 to \$100 for tips on how to use Macs, peripherals, or software. Send questions or tips to quicktips@macworld.com or Macworld Quick Tips, 501 Second St., San Francisco, CA 94107. All published submissions become the sole property of *Macworld*. Due to the high volume of mail received, we can't provide personal responses.

SIX KEY REASONS TO MAKE YOUR PAPER FORMS ELECTRONIC.

1 INSTANT FORMS:

Scan in existing forms for easy conversion, pick pre-built form components from a scrap album or create custom forms using powerful design tools.

2 EASY TO FILL OUT:

Filling out electronic forms is easy. Just tab and type. Enter data quickly from a list of drop down choices.

3 DATABASE INTEGRATION:

Automatically builds a database for each form. Search and sort records. Import/Export data via tab delimited file formats.

4 SPELL CHECKING:

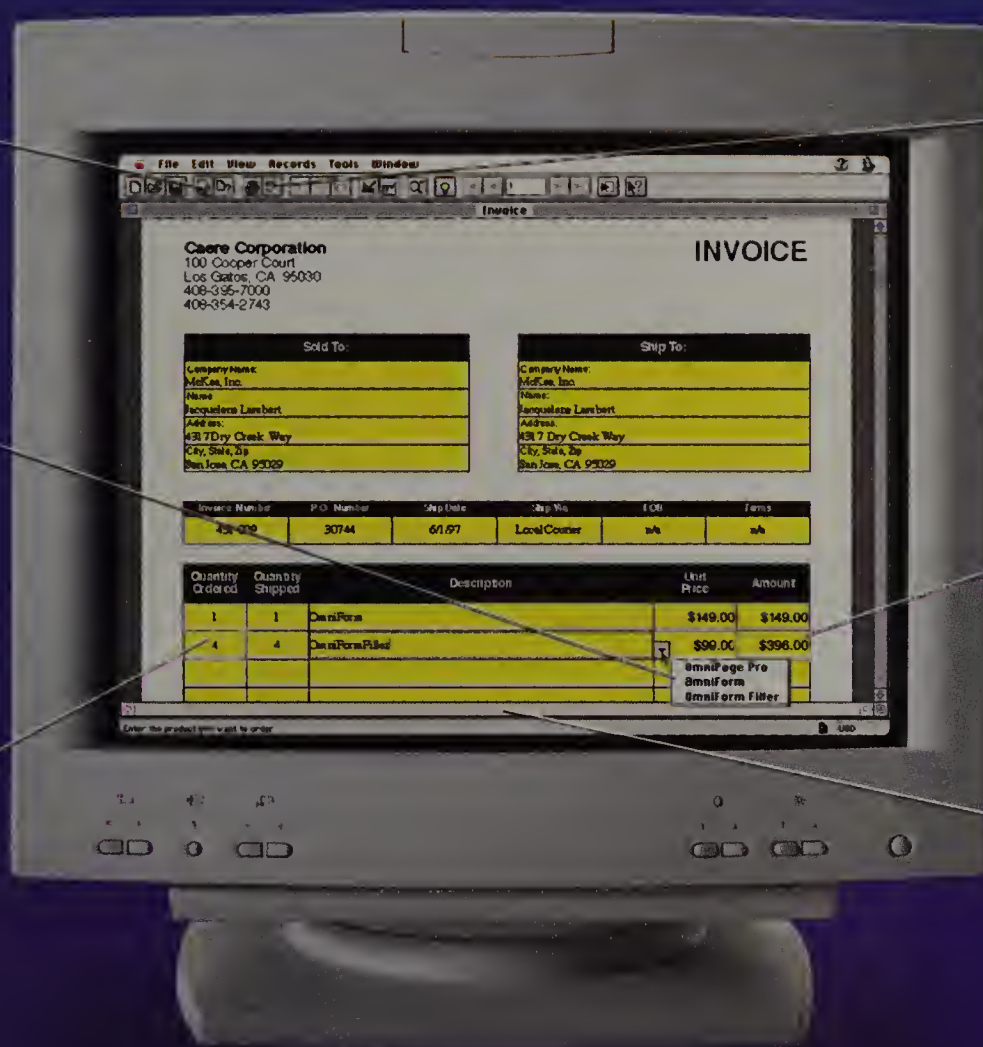
Electronic forms give you perfect results by spell checking your forms automatically. Plus you can print, fax or e-mail your forms to others.

5 BUILT-IN CALCULATIONS:

Electronic forms can create calculations automatically or just drag and drop using over 35 Excel-like calculations.

6 CROSS PLATFORM SUPPORT:

OmniForm file formats are platform independent, so Macintosh and Windows users can share forms.



OmniForm® GIVES YOU EXACT ELECTRONIC DUPLICATES OF YOUR PAPER FORMS IN SECONDS.

Don't put up with paper forms any longer. Using Caere's proven, award-winning OmniPage® OCR technology, OmniForm® lets you scan and convert existing paper forms into electronic forms in seconds. The result? Total electronic duplicates you can see on your computer screen, edit, fill out and even spell check. To enter or change data, you just tab and type. It's that easy!

With OmniForm, you can print and fax your forms, or e-mail them throughout your

company. And it gives you a simple, but powerful tool set to edit your forms, change fonts, add graphics or design completely new forms from scratch.

OmniForm also performs automatic calculations, validates entries and creates databases. So the information you get from your forms works a lot harder for you,

not the other way around.

Why deal with paper when you can save so much time and hassle using OmniForm?

Call or visit a reseller for your copy today.



caere
www.caere.com



Now only **\$149***

800-654-1187
extension 195



Available for Macintosh, Windows 95, Windows 3.1, and Windows NT

*Suggested price US dollars—subject to change without notice. Offer valid in US and Canada only. Caere, the Caere logo, OmniPage and OmniForm are registered trademarks of Caere Corporation. All other names are the property of their respective holders. © 1997.

Circle 68 on reader service card

And
the little man
behind the counter
smiles and says,
“I’m sorry, sir. Your
PC–printer won’t work
with your Mac.
You’ll have to buy
a new one.”
And he laughs. And
he laughs. And he
laughs.

Wake up. You’re just having
a bad dream.



The truth is, you *can* print. If you’ve been tossing and turning since you were told your Mac won’t print to your PC-printer, we have some good news for you. For only \$99, PowerPrint has the software and smart cable that makes it all possible — it’s a complete package that has everything you need.

No more compatibility nightmares. With PowerPrint

installed, you’ll be able to print from your Mac to over a thousand different printers from companies like Canon, Epson, Hewlett–Packard, Okidata, Panasonic, and more. What that really means is you don’t need to buy a new printer. It means you can use any PC-printer you want to. And it means you’re free to choose.

So get PowerPrint if you think you’ll be needing to print to a PC–printer anytime soon. And sweet dreams.

PowerPrint — the simple solution for anyone who needs to connect a Mac to a PC – printer



PowerPrint®

Call us: 800-330-6833
Visit: www.infowave.net

4664 Lougheed Highway, Suite 188, Burnaby, BC, Canada V5C 6B7 PH: 604.473.3600
FAX: 604.473.3699 E-MAIL: info@infowave.net WEB-SITE: www.infowave.net
© 1997 Infowave Wireless Messaging Inc. Infowave, Infowave logo, PowerPrint, PowerPrint logo are trademarks of Infowave Wireless Messaging Inc. which may be registered in certain jurisdictions. All other trademarks are property of their respective owners.

Circle 32 on reader service card

Media

Adobe Premiere Secrets

TIPS AND TRICKS FOR THE MAC'S MOST POPULAR VIDEO EDITOR

by Jim Heid

Chances are, if you edit digital video on the Macintosh, you use Adobe Premiere. Some high-end video boards include their own editing software, but nearly all entry-level and midrange boards include Premiere (or Premiere LE). While it lacks the ultraprecise motion-effects features of its senior sibling, Adobe After Effects, Premiere can handle simple clip layering and animation (for more on After Effects, see *Media*, May 1997).

This month, let's head into the cutting room for a collection of tips and insights on the Mac's most popular video editor. For examples and more information, visit www.heidsite.com.

Capture Tips

Before you can edit video, you have to digitize it. Premiere's Movie Capture command works with any QuickTime-compatible digitizer to enable you to capture video. Here are some tips for successful captures.

Optimize, Then Digitize To get smooth captures, follow the usual rules for capturing video: Enable only essential extensions; these include QuickTime itself and any extensions your capture hardware requires. Turn off AppleTalk and file sharing. Quit all other programs. Capture to your fastest hard drive (be sure to defragment it before your capture session). Use the compression setting



your capture hardware's manufacturer recommends. (For details on optimizing compression with the Power Mac 8500, see *Media*, November 1996. All of that column's information also applies to the newer Power Mac 8600.)

Here are two subtle optimization tips direct from Adobe's tech-support gurus. First, to reduce the chance of dropped frames during capture, choose LocalTalk instead of Ethernet in the AppleTalk control panel (yes, even though you've disabled AppleTalk). Second, insert

media in all removable-media drives: put a floppy in the floppy drive, a CD in the CD-ROM drive, and so on. This lets your system's CPU concentrate on capturing rather than periodically checking to see if you've inserted something.

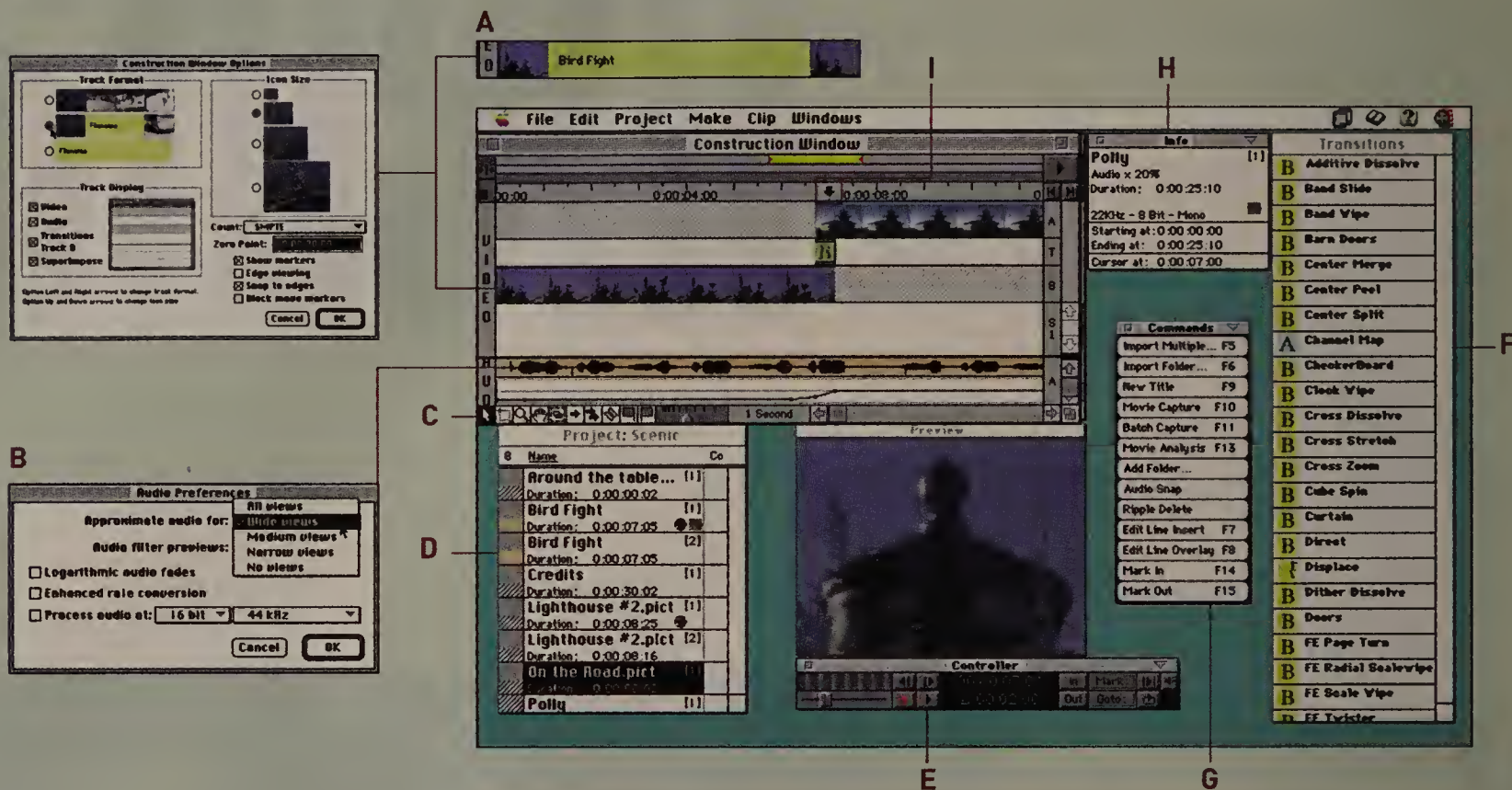
Sync or Sink If you notice audio-video synchronization drifting during lengthy captures, visit Adobe's Web site (www.adobe.com) and download version 4.2.2 of Movie Capture Module, which fixes some sync problems. You can also *continues*

Fine-tune to Work Faster in Premiere

Fine-tuning Adobe Premiere's window and preferences settings can improve performance and efficiency. You can customize most windows; here's how. With the desired window active, pull down the Windows menu; the relevant Options command appears. (You can

also open the Options window directly by just pressing ⌘-1.)

You can save any arrangement of Premiere's windows and apply it to other projects. Choose Layouts from the Windows menu's Arrange submenu, then click on the Save button.



A. For faster scrolling and redraw don't display continuous thumbnails in the Construction Window. Choose the middle or bottom Track Format options.

B. Displaying small audio waveforms can slow Premiere. If you don't always need to see the waveforms, choose Audio from the File menu's Preferences submenu and choose an option from the Approximate Audio For pop-up. If you never want to see waveforms, choose All Views.

C. You can activate each tool in the Construction Window by pressing its corresponding hot key. Most are mnemonic; for example, to activate the zoom

tool, press Z. Premiere's documentation and quick-reference card offer a full list.

D. Normally, Premiere displays small thumbnail icons here. That takes time. If you don't need thumbnails, uncheck the Show Icons box in the Project Window Options dialog box.

E. To view a compiled preview (which shows transitions and filters), press the enter key. You can view an uncompiled preview (which doesn't show them) by clicking on the Play button in the Controller bar.

F. If you don't need to see long descriptions of each transition, uncheck the Show Descrip-

tions box in the Transition Window Options dialog box. As shown here, Premiere then shows only transition names, enabling more transitions to fit in the window. Notice that you can create and switch between sets of transitions in Transition Window Options. If you use only a few transitions, create a set containing them. Navigating the Transition window will be much easier.

Two more tips: To jump to a specific transition in the Transition window, type the first few characters of its name. Since the transitions are listed alphabetically, you can rename them to change the order in which they

appear (transition files live in the plug-ins folder, within the Premiere folder).

G. Add frequently used commands to the Commands palette and assign function-key shortcuts to them. To customize the Commands palette, choose Options from its pop-up menu.

H. Use the Info window to set accurate audio levels.

I. To preview a specific spot in a project, click on that location in the time ruler. If you click and then drag back and forth, Premiere creates an on-the-fly preview. This can be sluggish on slower systems or with large frame sizes—another good reason to use miniatures.

download this plug-in from Adobe's customer-service areas on America Online (keyword *Adobe*) and CompuServe (go *adobeapp*). Note that the 4.2.2 plug-in doesn't work with Premiere LE.

If your system is just too slow to capture audio and video simultaneously without losing sync, try capturing them separately. When capturing video, turn off audio capture by choosing Sound Off

from the Movie Capture menu. Then go back and use the Audio Capture command to record the audio. Sync the two in Premiere's Construction Window. (Preproduction tip: It's easier to sync audio and video when your shots contain a clap. When videotaping people, ask someone in the shot to clap his or her hands once at the beginning of each scene. If you want to play Steven Spielberg, you can

buy a Hollywood-style clapper for \$24.99 from Markertek Video Supply, 914/246-3036, www.markertek.com.)

Performance Tips

Certain aspects of the digital video production process—particularly compressing clips and rendering transitions—can bring a computer to its knees. Try these *continues*

Make it Easy with the QMS® *magicolor 2*



Picture This:

Your boss calls from a meeting, demanding 6 copies of the presentation you've just finished—in color—right now—or he'll lose the deal.

No problem—you'll meet deadline—easily.

Simply choose the QMS *magicolor*® 2. The printer spools the job once, then fires out the multiple originals at 4–16 pages per minute.

The next thing you know, you're delivering the job—saving the deal. Your boss is so impressed, he gives you the day off.

Now you can take it easy, thanks to the QMS *magicolor 2*.

©1997 QMS, Inc. QMS, the QMS logo, CrownAdmin, CrownView, and *magicolor* are trademarks of QMS, Inc. All other trademarks are the property of their respective companies.

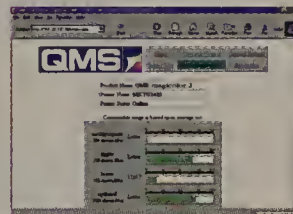
Easy to Use.

The QMS *magicolor 2* is easy to setup, quick to print, and creates picture-perfect output. And offering the most features for the least money, makes the QMS *magicolor 2* an easy choice.



Easy on the Network.

- ◆ Built-in Ethernet® and parallel interfaces
- ◆ PostScript® level 2 and PCL 5c emulations
- ◆ MOPY—multiple original prints
- ◆ 4–8 ppm color, up to 16 ppm b/w, equal to many monochrome printers
- ◆ Powerful 133 MHz 64-bit processor
- ◆ CrownAdmin® 3 state-of-the-art printer management tools



◆ CrownView™ web-based printer management displays consumable levels and printer status.

Easy on the Eyes.

Brilliant color. Deep blacks. Crisp text. Up to 1200 dpi, on legal-size sheets—with full color coverage!

Easy Consumables.

Finally, a color laser without a million messy consumables! The *magicolor 2* eliminates separate toner and developer cartridges, saving you time, mess, and money.

Easy on the Pocketbook.

Get the QMS *magicolor 2* from \$3,499.

Make it easy on those finance guys for a change.



1-800-49COLOR

Ext. 44

www.qms.com/?44

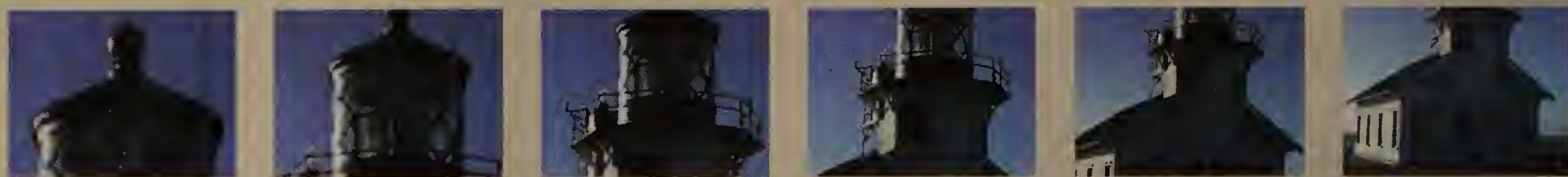


One Magnum Pass • Mobile, AL 36618

Circle 288 on reader service card

PANNING AND ZOOMING

This example of an Image Pan application begins with a close-up of the lighthouse lamp, then pulls back to reveal the lower portion of the building. The cropping rectangle in the Start and End images shows how much of the image will be visible at the start and end of the effect.



A. You can type specific values for the cropping rectangle or drag the rectangle's handles directly. Option-drag to maintain a rectangle's proportions while resizing.

B. Use these buttons to copy the rectangle from one box to another or to swap the two boxes' rectangles. Copy-

ing rectangles makes it easy to ensure that starting and ending shots have the same proportion, even if the size of the crop changes.

C. Checking the Ease In and Ease Out options causes the pan effect to begin and end gradually, creating a smoother, less artificial appearance.



tips to keep your machine on its feet.

Performance-Tune the Construction Window Premiere's Construction Window normally displays a series of thumbnail frames from each clip. This provides a nice visual overview of a project but can dramatically slow your Mac each time you scroll or move the Construction Window or change its time scale. The solution: fine-tune the Construction Window.

Use Uncompiled Previews When you want to preview part or all of a project, Premiere must *compile* the preview: crunch through each frame, rendering any transitions and effects. If you just need a rough preview—say, to check the overall pacing of a segment or to audition audio tracks—do an uncompiled preview (click on the Play button in the Construction Window or the Controller). To remind you that you aren't looking at a fully faithful preview, Premiere displays a red X in the Preview window during transitions and effects.

Make Miniatures If you're working with full-screen (640-by-480-pixel) movies, compiling transitions and processing filters can be agonizingly slow. Premiere's Miniatures tool speeds things up by creating small versions of the movies in a project. Choose Miniatures from the File menu's Tools submenu, then locate the folder containing your clips. You can change the size and compression settings for the miniatures, but Premiere's defaults—15 frames per second, 160 by 120 pixels—work well. After you click on the Select button, Premiere creates a new folder and stashes the miniatures within it.

Import and use these miniatures as you edit your project. When you're ready to compile the final movie, choose Save and then choose Re-Find Files from the Project menu. In the subsequent dialog box tell Premiere where the originals are. Premiere swaps the big clips for the little ones, and you're ready to go.

Cooking with Pans

Premiere has dozens of special-effects filters, and you can expand its repertoire with third-party plug-ins (see "Video Tools' Top Stars," May 1996).

Some Premiere filters are gimmicky—after all, how often can you use Camcorder, which simulates looking through a viewfinder? But one filter, Image Pan, has very practical applications: it lets you create a pan across a still image whose dimensions are larger than your movie's final frame size. Here are two ways you might use it.

Add Motion to Still Photos Say you're producing a documentary containing a collection of historic photos. Rather than just switching, slide-show style, from one static photo to another, use Image Pan to create slow pans across each photo. By adjusting the filter's crop rectangle, you can also create zoom effects—for example, starting with a close-up of a portion of the still image and then pulling back to reveal the entire image (see "Panning and Zooming").

You can use these techniques to create a dynamic movie even if you don't have any video-digitizing hardware: just use scanned images or even stock photos as your source material.

Create Rolling Credits Want to create classic rolling credits? Use your favorite image editor to create an image whose width matches that of your final movie, and whose height is tall enough to hold the credits. Import that image into Premiere, then use Image Pan to pan vertically from the top of the image to the bottom. If you have Adobe Illustrator, use it to create the credits text. Premiere rasterizes and antialiases the text when you import the file.

Now Premiering on the Web

Every program has to have a Web angle these days, and Premiere is no exception.

Compress for Streaming Video Several plug-ins that compress video for streaming over the Web are available, including one for Progressive Networks' RealVideo. Adobe's Web site contains details and links to the plug-ins.

Make Animated GIFs In June, Adobe shipped an export module that lets you turn a project into an animated GIF file. (For background on animated GIFs, see *Media*, September 1996.) Registered Premiere users can download the export module from Adobe's Web site (you have to enter your serial number before downloading).

Premiere's built-in titling, transitions, and motion-animation features make it a formidable GIF-animation factory—and extend its appeal beyond the traditional video-editing realm. **m**

Next month: Stupid JavaScript tricks

JIM HEID is the author of *HTML & Web Publishing Secrets* (IDG Books Worldwide, 1997).

Unbelievable Ease of use

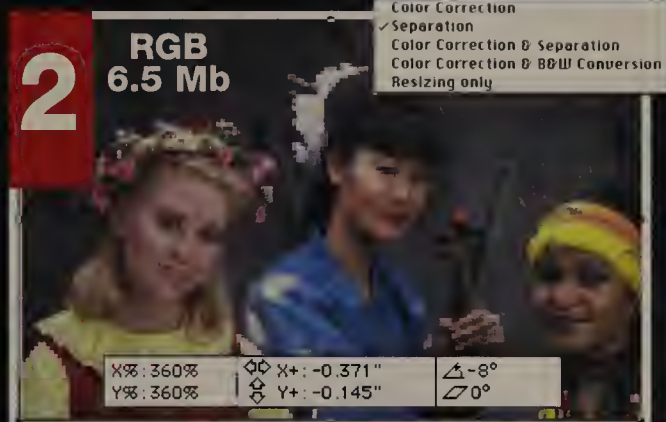
Don't be concerned about the resolution, size, horizontality and color correction and mode. Just import images in the Quark image box from a Photo CD disk or from a raw scan. Position them however you want using QuarkXPress's tools. For each, send orders with the processing options to the IPM:

I import my pictures in my QuarkXPress document's image boxes



TIFF, EPS JPEG or Photo CD ImagePac; RGB, YCC, grayscale or CMYK. This image was scanned from a 35 mm original in RGB raw mode at 100% size on a PowerLook 2000 flatbed scanner at its optical resolution of 1000 dpi.

I position them using the XPress tools and I select processing options using the binuscan XTension



The client XTension writes the "order list" then sends it to the IPM for processing. It includes the values entered in the QuarkXPress "measurement bar" plus the processing and output options set in the XTension's user interface.

Phenomenal Productivity

A catalog with hundreds of images that may require several people a week's worth of work can be processed and ready to output in just a few hours. Processing can take place overnight, even on a low-end desktop computer, with little RAM.

After processing, the new recalculated images are re-imported in the desired color mode with the right amount of pixels... automatically



From a single RGB file, those CMYK, grayscale or CMYK-BW processed images will output at a blazing speed, due to their optimization,

Astonishing Quality

Each processing algorithm uses state-of-the-art technology. Even when the IPM is used only to resize images previously color corrected and separated, the screen preview is recalculated with colors and a sharpness that are truly impressive. No more surprises on the color proof!

binuscan Inc.
505 5th Avenue - New York, NY. 10017
Tel: (800) 881-2352 - Fax: (212) 681-0603

See it to believe it!
Call today 800-881-2352
and receive a free demo disk

On the Internet:
<http://www.binuscan.com>
e-mail: info@binuscan.com



binuscan®
ColorPro

Client/Server Applications
for complete digital image management

Mac OS & Windows 3.11, 95 & NT

THE SERVER APPLICATION

"binuscan IPM" (Image Processing Machine) works in the background, using the processor only when it's free. It recalculates a new image based on the original and a list of orders generated by a client application. This "order list" contains all the user's output preferences, including (but not limited to) CMYK separation specs, automatic color correction instructions, and sharpening levels, as well as any other modifications made to the image (crop, flip, rotate, resize, etc.) by the client application. binuscan achieves an impressive high and consistent quality every time because the IPM bases its processing algorithms on an individual histogram analysis of every image.

THE CLIENT APPLICATION

Many client applications can be used to generate "order list" text files and save them into the IPM's "TO DO" folder for processing. binuscan's open architecture allows third party developers to write custom client applications. The binuscan ColorPro® package includes the binuscan IPM® plus client applications to acquire images from scanners or Photo CDs and binuscan Job-Manager® (a Quark XTension) which works as described to the left.

THE PERSONAL TOUCH

binuscan ColorCorrect is a utility included with the IPM which allows you to create ghost effects or "sepia effects" and harmonize the images on your page. This utility will perform color adjustments to processed images by writing PostScript functions to the image file. Modifications are written then updated in your page layout in seconds, no matter how large the files are. Every modification can be reverted with the same ease and in the same manner.

Circle 6 on reader service card

a special version of binuscan

is bundled with all

UMAX

high-end scanners

and is freely available for every



Pro Master Photo CD

binuscan®
PhotoPerfect

Quark and QuarkXPress are registered trademarks of Quark, Inc.

Well-Adjusted Layers in Photoshop

by David Blatner

What you don't know can't hurt you, right? Maybe. Isn't that what they say in scary

movies right before the monster makes its first move? Well, when it comes to Adobe Photoshop, it's definitely *false*. Here's a horror story I hear all the time: You have an image that needs a lot of help. First you try tweaking Levels to lighten the image. It's an improvement, but the image still needs help. So you turn to Hue/Saturation to remove a color cast, then Curves to heighten the contrast, then Levels again to make it a little darker, and so on. Eventually you wind up with an image that looks like something the cat dragged in.

What didn't you know? Every time you make an adjustment like this you lose some information; eventually those losses turn into visible damage (for example, the image may start to look grainy and mottled). Perform a number of adjustments, and it's easy to end up with a picture that has good contrast, color, and tone, but lousy content.

Fortunately, Photoshop 4's adjustment layers let you make these kinds of trial-and-error adjustments with minimal penalty because the changes don't actually affect the image until you've finished working on it. You create and edit adjustment layers in the

Layers palette just as you would a normal layer. But instead of painting images on an adjustment layer or using it for compositing, you use it to apply a tonal or color correction to the image. If you decide to tweak the image a

little (or a lot) more, you can just double-click on the adjustment layer and change its settings.

Stacking Layers

The ability to go back and change the adjustment layer is

almost as good as having an unlimited number of undos. But even better is the way you can stack adjustment layers to combine changes. Theoretically, you could use a single Curves adjustment to both lighten a really dark image and take care of a horrible green color cast, but you'd probably drive yourself crazy. Doing the two steps separately is much easier. You just create a second adjustment layer and stack it on top of the first.

Another benefit to adjustment layers is that once you've applied the effect, you can reduce or remove it globally or locally. If you like the Levels adjustment layer you made, but it's harsher than you wanted, you can reduce the intensity by changing the Opacity slider in the Layers palette (or you can double-click on the layer to adjust the Levels sliders).

If you want to reduce the intensity of the effect in just one area of the image, you can select the adjustment layer and paint on it. Painting on an adjustment layer automatically paints on the layer's mask: painting with black removes the effect (by masking out the layer), painting over the black with white reapplies the effect; painting with gray partially masks or reapplies the effect.

Layer Adjustment Limits

Adjustment layers cannot perform some important tasks, such as sharpening with the Unsharp Mask filter, and ad-

Step-by-Step Adjustments

Original



This image needs a lot of work. While you could try to fix everything at once through Curves, it's easier to use adjustment layers to make several small corrections.

1

1. Always fix the biggest problem first. In this case, the image has a horrible color cast.



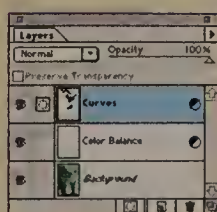
2

2. I eliminated the cast with a Color Balance adjustment layer.



3

3. The image is still too dark.



4

4. I next added a Curves layer to pump up the brightness and contrast slightly.

Final



5

5. Some areas became too light, others gained too much contrast. I corrected for this by painting on the layer's mask to reduce the effect locally.

Bringing Out Details

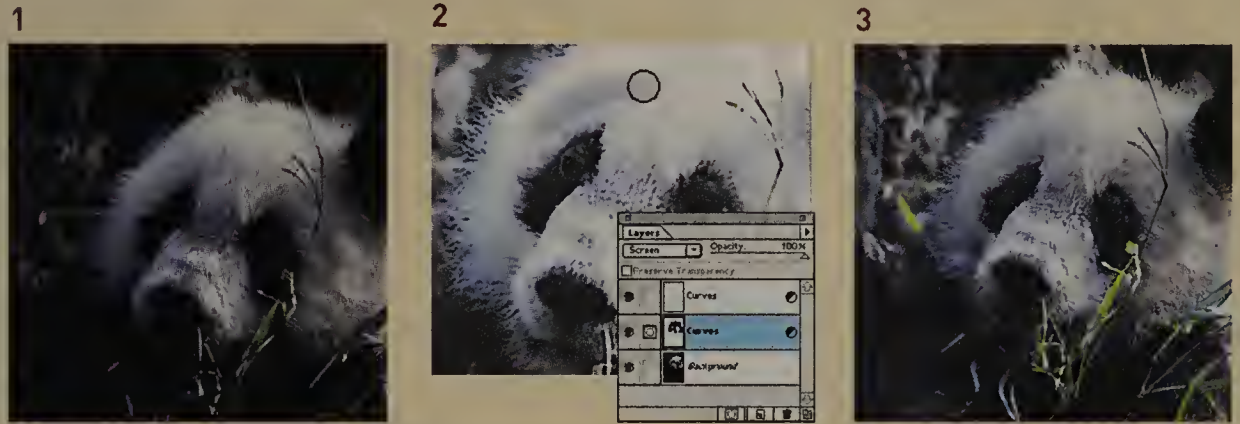
justment layers (or any layers) can cause trouble because they take up extra space in RAM. But in general, if you use Photoshop 4 and have plenty of RAM, you should make tonal and color corrections with adjustment layers.

When you've got the image the way you want it, save it in the Photoshop file format to keep the adjustment layers intact (you never know when you'll need to make another change). Then, using the Save A Copy command in the File menu, save the image to disk as a TIFF or EPS file. This command lets you flatten the layers and save at the same time. When Photoshop flattens the image, it makes all the adjustments at once, so you don't damage the image any more than you need to. **m**

DAVID BLATNER is coauthor of *Real World Photoshop 4* (Peachpit Press, 1997) and *The Joy of Pi* (Walker and Company, 1997). You can reach him at david@moo.com.

Photographs that are dark or underexposed often appear to have lost detail in their highlights or shadows. You can sometimes draw these details out and get a good-looking image by using "neutral" adjustment layers and setting them to Multiply or Screen mode. To make a neutral layer, create a Levels or Curves adjustment layer but *don't* change the settings in the Levels or Curves dialog box. The image doesn't change until you choose an apply mode.

For overexposed images that are too light, set the apply mode to Multiply. This builds density, darkening the image. For underexposed images that are too dark, set the apply mode to Screen. This reduces density and lightens the image intelligently.



This image is so dark there's no detail in the shadows. Note the panda's eyes—or rather their absence (1). The addition of two neutral Curves adjustment layers, both set to Screen mode, makes the image significantly lighter. The

panda's head is now too light, so I painted on the adjustment layer's mask to reduce the effect in the brightest white areas (2). Details in the eye area now stand out, but details in the white fur remain (3).

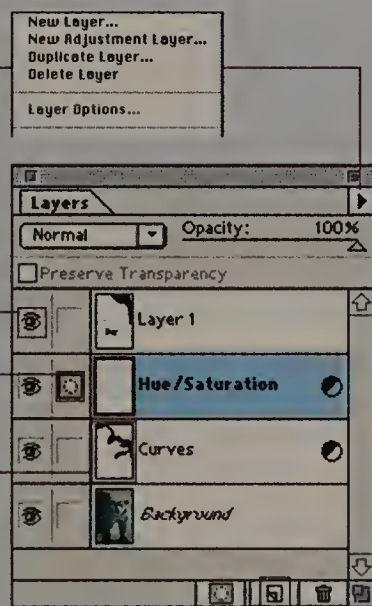
MAKING ADJUSTMENT LAYERS

Click here to see a variety of layer options, including adjustment layers.

Click here to show or hide a layer (to see "before" and "after" versions).

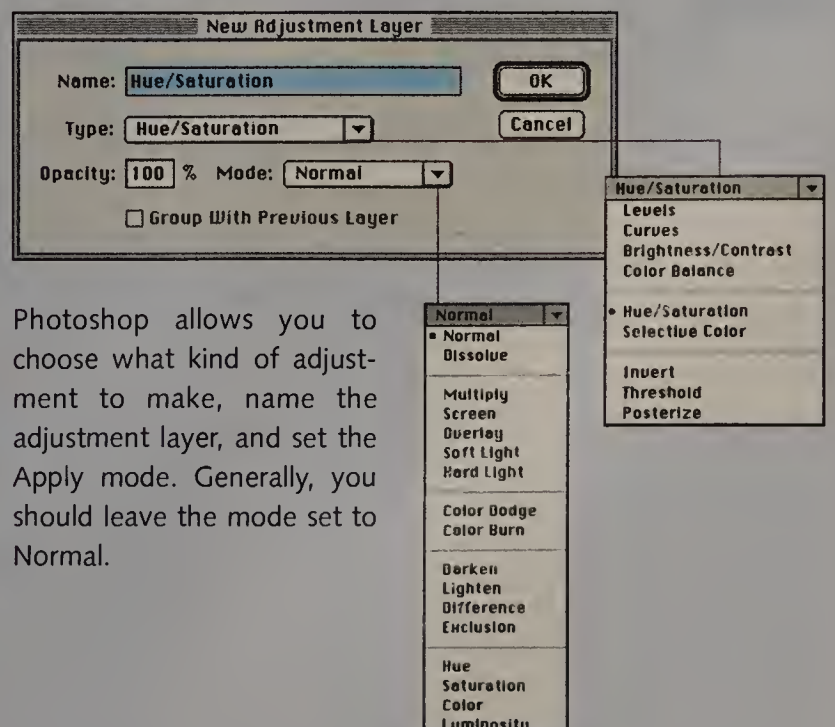
Painting on an adjustment layer automatically creates a layer mask.

Paint on the adjustment layer's mask appears in this thumbnail.

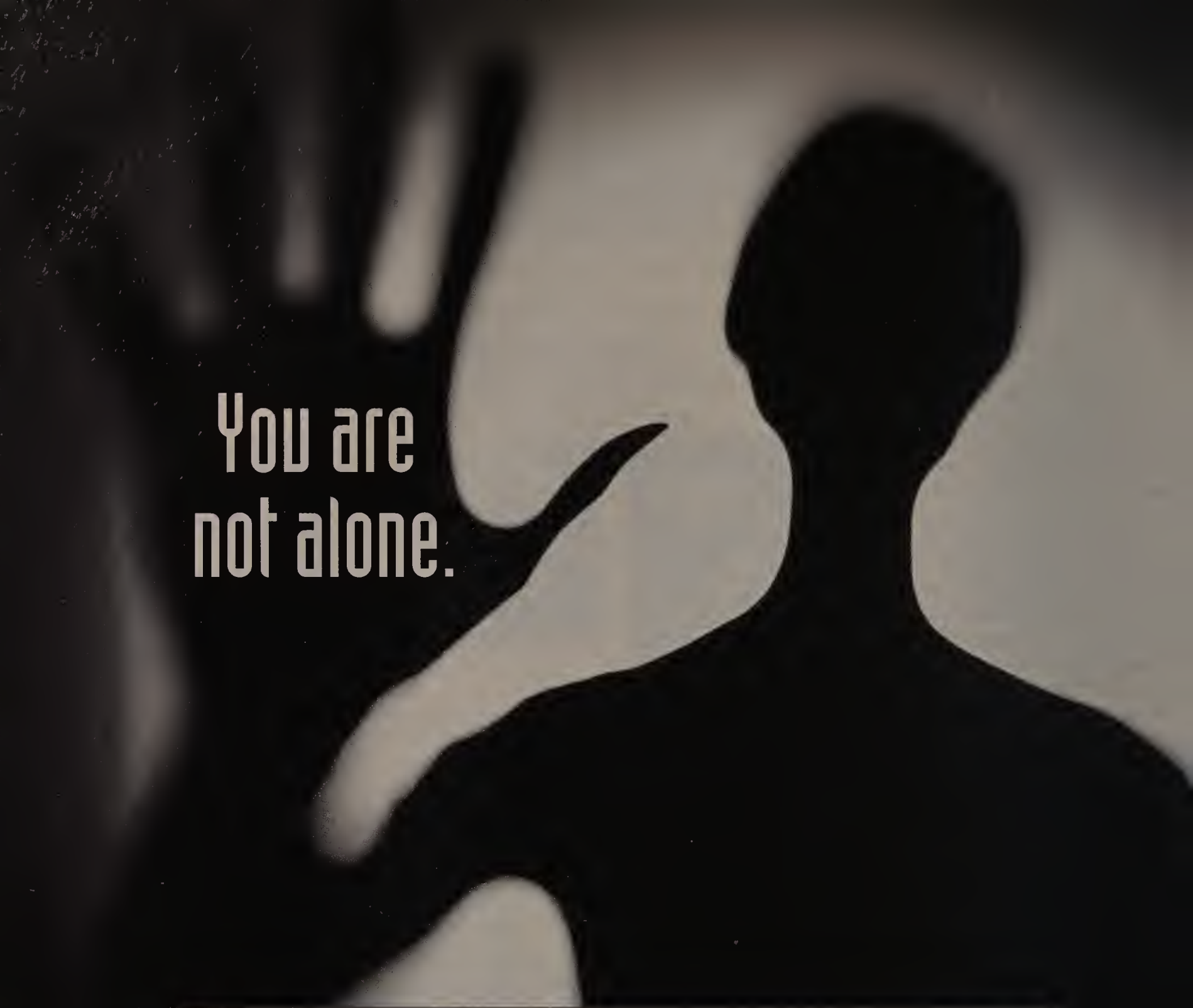


⌘-click here to make a new adjustment layer.

To make an adjustment layer, choose New Adjustment Layer from the New submenu (under Photoshop's Layer menu). Or, faster yet, ⌘-click on the New Layer button in the Layers palette.



Photoshop allows you to choose what kind of adjustment to make, name the adjustment layer, and set the Apply mode. Generally, you should leave the mode set to Normal.



You are
not alone.

If T1, Frame Relay, and ISDN seem a bit alien, it's time you visited Netopia.

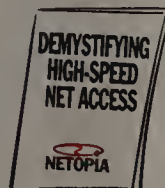
High-Speed Internet access remains an unsolved mystery for most people. Having to share modems in your office is slow. So you start to explore routers, T1's, Frame Relay, ISDN - a whole new alien language. Where can you go? Netopia.

Farallon, a leader in Macintosh networking products, introduces Netopia, a complete product line of high-speed solutions to connect your business to the Internet. It's easy, affordable and upgradeable. We've even put together a simple guide to demystify everything. We clear up the buzzwords, explain the costs, and outline the benefits of our award-winning Netopia solutions.

We make high-speed Internet access a no-brainer. We've networked over 7 million nodes in the past ten years, and made connectivity easier for growing businesses who don't have huge IT departments.

For your FREE booklet, call **1-800-NETOPIA** or visit **www.netopia.com/helpme.html**. Ask about our "Up & Running, Guaranteed!" service, where we do all the work, so you can focus on your business.

What else would you expect from life in Netopia.



NETOPIA

What the Internet experience should be.

"GOOD ARTISTS COPY. GREAT ARTISTS STEAL,"

said Pablo Picasso. Although borrowing ideas and motifs from other works is common practice in any creative endeavor, Picasso probably never imagined a digital realm in which images could easily be copied and moved with no loss of quality.

Now we live in just such a digital world, and one side effect of our Web browsers and low-cost scanners is that copyright infringement has become an issue for artists and publishers of all kinds. It used to be fairly expensive and difficult to scan and descreen an image from a magazine. These days, scanners are cheap and plentiful, and with a few mouse clicks on the World Wide Web, a user can copy images made by people on the other side of the globe.

If you earn your living creating images, take a look at these solutions, both legal and technological, for protecting your intellectual property.

By Ben Long

graphicsuser@macuser.com

Safeguard Your Art

It's 1997. Do you know where your images are?



Your Basic Copyright Rights

The good news is that you really don't *have* to do anything to copyright your creative work, be it words or images on paper or on the Web. All these things are automatically copyrighted by U.S. law, simply because you made them. Be aware, however, if you create artwork "for hire" — which usually means while you're at your job — the copyright belongs to your employer.

It's enforcing your copyright that can get tricky, especially on the Web. After all, once your work is on someone else's machine, what's to stop that person from claiming ownership?

Getting the Law on Your Side

One of the first steps you can take to protect your images, then, is to get proof that they're really yours. If you get into a situation where you need to defend your copyright legally, it won't be enough to simply point to a copyright symbol on your Web page. You will need to have registered the images with the U.S. Copyright Office and made your rights a matter of public record. Registration is a requirement before you can file a copyright-infringement suit in court.

You can get detailed information about registration, as well as registration forms in Adobe's PDF format, from the U.S. Copyright Office's Web site. There is a \$20 fee for registering. After processing your form, the Copyright Office will send you a certificate of registration. With this in hand, you have immediate proof that your artwork is your own.

Low-Tech Protection

It's nice to have the law behind you, but many of us would rather not ever get to the legal stage. The threat of copyright infringement and the possible legal consequences that may follow are not always enough to keep other people from stealing your images — either intentionally or unwittingly.

The easiest low-tech way to make your images less enticing is to place a visible watermark of some kind, such as a copyright symbol or your name, somewhere *on* the image. A company that does this is Digital Stock (www.digitalstock.com), a stock-photo house that sells royalty-free photos. Digital Stock protects the low-resolution sample images it publishes on the Web and in its CD-ROM catalog by putting a large ghosted copyright symbol

GraphicsUser

in the center of each sample image (see Figure 1).

Digital Stock doesn't worry about the high-resolution, suitable-for-printing images on the CD-ROMs it sells. First, the images are royalty-free, so customers who've bought a CD-ROM are free to use the images in most situations. Second, the company assumes that its customers — people who work in high-end professional design houses that would rather not see their profits eaten up in legal hassles — will generally tread carefully around copyright issues anyway.

Using visible, low-tech watermarking and down-sampling images to low resolution (which is inevitable when you place images on the Web) are both good basic methods for deterring users from pirating images and then *printing* them. However, there's nothing to prevent unscrupulous users from cropping or touching out a low-tech watermark so that they can use images in their own Web pages or in other low-resolution media, such as multimedia presentations. For that sort of protection, you need a more robust way to mark an image.



Figure 1 • *Digital Stock, a stock-photography agency, protects sample images such as this on its Web site by putting a ghosted copyright symbol in the image's center. The image also does not have sufficient resolution to print at the highest quality.*

High-Tech Protection

Digital watermarking is a way of encoding copyright and ownership information *within the data* that makes up an image. Ideally, this information is invisible enough that it doesn't degrade the quality of the image and durable enough that it can't be cropped or edited away. Several companies, including Signum Technologies and Digimarc, currently offer digital-watermarking products, and soon there will be even more. Keep an eye out for a new competitor — Signify (an NEC company) — entering the field within the next year.

Signum Technologies and Digimarc offer very similar digital-watermarking systems, but as of now, Digimarc's has the edge. It's the only digital-watermarking product that is integrated into major graphics programs such as Adobe Photoshop (and the Windows standards CorelDRAW and Corel PHOTO-PAINT). Digimarc is also the only company that offers a service to help you find image thieves (as we'll discuss later).

The integration of Digimarc's product with major graphics applications is more than just convenient; it means that the company's digital watermarks can more *actively* protect your images. PictureMarc, the tool for reading and embedding Digimarc watermarks, is built into Photoshop 4.0, so each time someone opens your image, Photoshop automatically checks to see if the image has a Digimarc watermark. If there is a watermark, the person looking at your image will see a small copyright symbol (©) in the title bar. So warned, the viewer can use the Digimarc Reader plug-in (located on the Filter menu) to see what copyright restrictions you've placed on the image, view your creator ID, and even link to the Web to find out how you can be reached.

When you register with Digimarc as an individual, you receive a creator ID, for an annual fee of \$100, and the license to watermark an unlimited number of images. Corporate accounts are also available, and the fees vary from \$850 to \$5,000 a year, depending on the level of software and service the company desires. Digimarc also offers a batch processor for companies that have large numbers of images.

Digimarc's watermarking software adds an encoded pattern to your image — the watermark — which imitates photographic noise. This means that there is little change to image data. (To see what a digital watermark adds to your image, see the second image in the "Steal This Dog" sidebar.) Because your ownership information is encoded in a noise pattern that's spread throughout the image, the watermarks are quite resilient. There's no way to crop the information out. According to Digimarc, the company's digital watermarks survive even if you've cropped an image down to as small as 128 x 128 pixels. In addition, the watermarks can survive resizing, from 60 percent to 200 percent, as well as sharpening, blurring, rotating, and many other filter effects.

Most important, however, Digimarc

watermarks can survive halftoning and re-screening. If you unexpectedly see one of your images in a magazine or newspaper, you can simply tear out the image, scan it, and have your reader software check the resulting image file for your watermark. (See the "Steal This Dog" sidebar.)

Digimarc's watermarks are not indestructible. Given the pixel-moving power of image-editing software, it is possible to corrupt the noise-based data in an image. However, by the time someone has done enough to your image to wreck the watermark, the culprit has probably ended up with a derivative image that is beyond your legal claims as the original owner.

Despite the power of Digimarc's software, digital watermarking isn't for everyone. Digital watermarks are well hidden, but the watermarking software *is* making changes to your images. Although you can't tell a PictureMarc-altered image by sight, some people report that they can tell a difference when they juxtapose a watermarked image and an original.

If you've spent a lot of time and effort getting an image just right, handing it over to a program that's going to change it — no matter how imperceptibly — may be a little unnerving. One way to decide if it's worth the effort is to consider the second part of image protection — *finding* the people who've swiped your images.

Stop, Thief!

No matter how much proof you have that you own an image, it won't do you any good if you don't know who's taken it. Since visitors to your Web site don't leave foot- or fingerprints, you're faced with a lot of Web surfing and magazine reading if you want to try to find images that may have strayed from their rightful locations.

Fortunately, Digimarc has addressed part of this problem as well. The recently released MarcSpider is a Web-based agent that prowls the Web searching for PictureMarc-encoded images. (Sorry, no current technology can flip through the pages of printed magazines for you.) Once it has found an image, MarcSpider reads the image's watermark and creates a report that includes a thumbnail of the image, the URL of the site where it was found, the date on which it was found, and the date on which the page was last modified.

MarcSpider service is included with individual users' registration fees and with



IS THIS JAZ OR THE *hustle?*



Once you get past the cute name and trendy packaging, the only thing Jaz® users have left is a thinner wallet. Good thing there's DynaMO® 640 removable storage from Fujitsu. DynaMO 640 is much more durable because it's magneto-optical (unlike Jaz). It

lets you save your work on different media capacities ranging from 128MB to 640MB (unlike Jaz). You get free tech support (unlike Jaz). And it's less than half the cost of Jaz media,* with a 640MB cartridge going for only \$25. (Bye-bye Jaz.) There's also our No Excuses™ policy: Our promise that in the unlikely event your drive fails within warranty period, you'll get a replacement drive in two business days. For more details, without the hustle, call, or visit our website.

(800) 735-4510 www.fcpa.com

©1997 Fujitsu Computer Products of America. DynaMO is a registered trademark and No Excuses is a trademark of Fujitsu Computer Products of America, Inc. All rights reserved. Jaz is a registered trademark of Iomega Corp. * PC Magazine Online 6/12/97.

Circle 202 on reader service card



GIMME FIVE FREE

Get a free 3.2 gigabyte
5-pack of media when
you buy a DynaMO 640
before Nov. 15, 1997.

For all the details,
call (800) 735-4510
or visit www.fcpa.com.

FUJITSU

GraphicsUser

many of the corporate packages. In order to access the report, you simply go to a special section of the Digimarc Web page and enter your creator ID and password. The report is then displayed within your browser.

The rub is that if you routinely sell images, you'll need to be able to differentiate between legal and illegal postings of those images before you plow through a huge MarcSpider report (or else you may accidentally send nasty letters to legitimate clients). Digimarc has recently come up with one solution to this quandary — a batch image processor that can add an additional watermark containing separate ID tags for the creator of an image and the distributor of an image as well as unique transaction numbers. This way, you can tag individual copies of images with unique information to help you determine if the use of that image is legal or not.

The fact is, however, that the utility of MarcSpider depends on your situation. If you've got thousands of images floating around the Web, digging through a huge report of legal and illegal image postings just may not be worth the trouble. On the other hand, if you're creating images that you *know* shouldn't be anywhere else on the Web — such as images for online catalogs, real-estate photos, or custom images and icons — MarcSpider makes it simple to track images that have strayed to other sites.

Calling in the Copyright Cops

If you do find Web sites or printed material containing stolen images, there are several things you can do. In most cases, people who steal images have done so unwittingly. Particularly on the Web, where many people are publishing their work for the first time, users sometimes just don't realize that it's not legal to reuse images taken from another source. In most cases, simply contacting these people and asking them to remove the images is all you have to do.

If someone refuses to remove an image, then it's time to fall back on your digital watermark and copyright registration. Contact the author of the Web page, and tell that person that the image in question includes a digital watermark that proves your ownership and copyright. Most likely this will scare the person into removing the image.

If your adversary remains stubbornly

Steal This Dog

Or, rather, steal this picture. (The actual dog is safe in an undisclosed location in Oakland, California.) Although it looks as vulnerable as the next image, this photo actually contains a Digimarc digital watermark. The watermark, which is encoded with ownership and copyright information, is hidden in the image's noise pattern.

You can see it for yourself if you scan the image into your computer and open it with Photoshop 4.0. Photoshop will automatically detect the watermark and place a copyright symbol (©) in the document's title bar. All you have to do to see who took the photo — and what restrictions, if any, have been placed on reproducing it — is choose Read Watermark from the Filter menu (Filter: Digimarc: Read Watermark). If you have trouble reading the digital watermark after scanning, apply the Blur filter (Filter: Blur: Blur) and try again. If you don't have a scanner, you can also find this image on our Web site.

With a little help from Photoshop, you can go even further behind the scenes to see what a Digimarc watermark adds to your image, as we did with the second image below. To test a watermark of your own creation, open an image in Photoshop and save the file with the name Unmarked. Then embed a generic watermark in the image (Filter: Digimarc: Embed Watermark) and save this altered file with the name Marked.

Open both image files, and place them side by side. Click on the Unmarked image to select it, and choose Calculations (Image: Calculations). In the Calculations dialog box, set Source 1 to Unmarked, Source 2 to Marked, Blending to Difference, and Result to New. When you're done, click on the OK button.

You should see a new window filled with solid black. Choose Levels from the Image menu (Image: Adjust: Levels), and slowly slide the Gamma slider — which is the gray slider in the middle — toward the left. As you do so, the Digimarc noise pattern will begin to appear. You're seeing the difference between the two images, which in this case is the custom noise pattern that the Digimarc plug-in embedded in your image.



This looks like just an ordinary picture of a dog, but actually this image is protected with a digital watermark, an encoded pattern that imitates photographic noise.



A Digimarc digital watermark adds a simple code to your image, distributed throughout the image and disguised as image noise, which you can see here. Because it's in all parts of the picture, it cannot be cropped away.

unconvinced and you end up in court, one piece of good news is that if you registered your image with the U.S. Copyright Office before it got stolen (or within three months of its publication), you're entitled to statutory damages and attorney's fees.

Mine, All Mine

The lengths to which you're willing to go in order to keep your images close to home will depend largely on the types and quantity of images you have to protect. Protecting your images from the

threats of the modern world can certainly take extra work, but whatever method you use, if any, try to take some time to research your legal rights.

Whether you're trying to safeguard hundreds of images or just a few, careful attention to the details we've outlined here can help you make sure your work doesn't get hijacked (or imagejacked) on the information highway. ☒

Ben Long is a freelance writer and illustrator as well as a MacWEEK contributing editor.

NEW ADOBE® ILLUSTRATOR® 7.0 for MACINTOSH®

NO JOB TOO BIG. NO JOB TOO SMALL.

SEAMLESS INTEGRATION

Works seamlessly with Adobe Photoshop® and PageMaker® like no other illustration software. Learn faster, work faster—same user interface, including shortcuts and menus. Even drag & drop between all three.

WINDOWS® AND MACINTOSH, SAME GREAT FEATURES.

It's never been easier to share files with colleagues, clients and service bureaus.

PRECISION CONTROL

Create, transform and align artwork and type exactly the way you want. Adjustable guides, grids and "snap-to" make layout design easier. Unique tools let you wrap type around objects and run type on a path.

UNMATCHED COMPATIBILITY

Support for more than 20 image, graphics and text formats, including TIFF, WMF, CDR, PhotoCD™, GIF89a, MS® Word.

CALL NOW FOR YOUR
\$129 UPGRADE
NEW ADOBE
ILLUSTRATOR 7.0
FOR MACINTOSH.



Now there's a way to expand your creative tools on any size job. Adobe Illustrator 7.0.

Organize your workspace any way you like with new tabbed palettes, just like the ones in Adobe Photoshop. See how productive you can be by choosing colors with a simple drag-and-drop. Speedy image handling and the ability to link images in virtually any format lets you work faster, with smaller files. And if it's flexibility you're after, Adobe Illustrator 7.0 delivers! Great new features include vertical text, easy multiple master font control, adjustable grids, and support for professional color management systems. Even Web jobs are easier, thanks to RGB color support, URL embedding, and built-in Web-ready color palettes. For more details, call 800-649-3875, extension 31909. Or you can visit our Web site at www.adobe.com/prodindex/illustrator.



FREE
WITH PURCHASE
GRAPHICS • PLUG-INS
LEARNING CD's
[@www.adobe.com/actionpack/print.html](http://www.adobe.com/actionpack/print.html)

By Janet Ashford

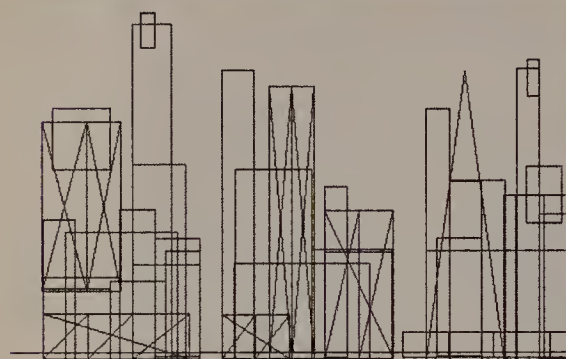
graphicsuser@macuser.com

3-D Tricks for the 2-D Trade

Stick to simple shapes, and you can harness the power of 3-D without all the hassle

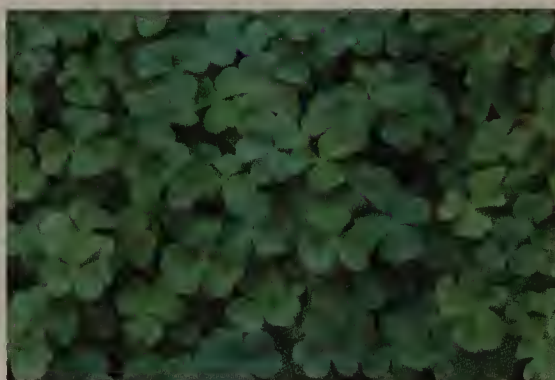
ADDING EXTRA DIMENSION to your design takes on a whole new meaning when you start to experiment with 3-D images in your 2-D work. Many artists are intimidated by 3-D applications' lingo and learning curve, which can seem impenetrable if you're used to the limited depth of Adobe Photoshop layers. However, if you stick to ready-made shapes, called *primitives*, and a single texture map, you can successfully tap into the power of 3-D even if you've never dared to before.

Nearly all 3-D programs have tools that quickly create primitive shapes such as cubes, spheres, cylinders, and cones. These basic shapes are provided because they're the building blocks of so many other forms and objects, natural and human-made.



1 Begin to build your model by creating simple shapes.

Most 3-D programs have special tools designed for quickly creating basic 3-D shapes, or primitives. If you click on the Cube tool on the Tool palette, for example, you can drag your cursor to create a cube of any size. Odam wanted tall skyscrapers, not square boxes, so he selected the Object Scale tool, grabbed the top of a cube, and dragged upward to stretch the cube until it became a rectangular box. He then used other primitive tools to create different shapes, including a flat plane (which serves as the ground), a cylinder, and a pyramid.



2 Choose a seamless image to wrap around your shapes.

Once you have your shapes in place, find an image to wrap around them, preferably one designed to repeat seamlessly, much as wrapping paper does. Odam found an image of clover in the Wraptures stock collection. If necessary, convert the image to the PICT file format. To load it into StudioPro, select the Textures tab from the Resource palette (Windows: Show Resource Palette), choose New Surface Texture from the pop-up menu, click on the Map button, choose Load from the Map dialog box, and select your file. It will appear as a highlighted button under the Textures tab. To apply it to the surface of your shapes, select the model (Selection: Select All) and click on Apply under the Textures tab. (Don't be alarmed if little seems to happen — you won't see the finished effect until your model is *rendered*.)



3 Adjust your camera angle, and add lighting effects.

To change your view of the model, create a new *camera*. Select the Camera Object tool from the Tool palette, and then click on your 3-D world. You'll see a small camera with a red wire-frame pyramid jutting from its lens, which indicates what's inside the camera's field of view. Select your Object Move tool, and click and drag the red lines to include or exclude objects. Then open that camera's window (Windows: Camera Windows: Camera-1) to see through its eye. To create a light source, open the Environment palette (Windows: Show Environment Palette) and click on the Lights tab to see a dark circle that represents your 3-D world and a white adjustable globe that represents a light (if there's no globe, click on Add, and one will appear). Odam used a single light source to get the effect of natural sunlight falling on the city.

Primitives usually form the base of more-complex models, but they can also be used on their own. When the right surface texture is applied, a simple primitive shape can look very real. For example, a map of the world applied as a surface map to a sphere can make a globe; a product logo applied to a cylinder can make a realistic-looking can of soda. And when you combine primitives with unusual surface textures, you can also create improbable Dada-like objects such as a fur-lined bowl and spoon.

Come along as we follow designer John Odam's steps for creating a book cover that integrates 3-D art. Odam needed a clever way to illustrate the concept of combining big business with environmental awareness. He used Strata StudioPro to

create a basic 3-D model of city buildings. He then wrapped the buildings' shapes with an image of leaves to hammer the metaphor of the book cover home.

We've used Strata StudioPro 2.0.2 menu commands here, but you can get the same effect in older versions of that program, which you may want to stick with after you read our review of version 2.0.2 ("Pop Art," September '97, page 54). Many other 3-D applications will work as well.

Janet Ashford is the coauthor with John Odam of the forthcoming Start with a Shape: A Designer's Guide to Desktop 3D (Peachpit Press, 1998). Visit her Web site at www.jashford.com.

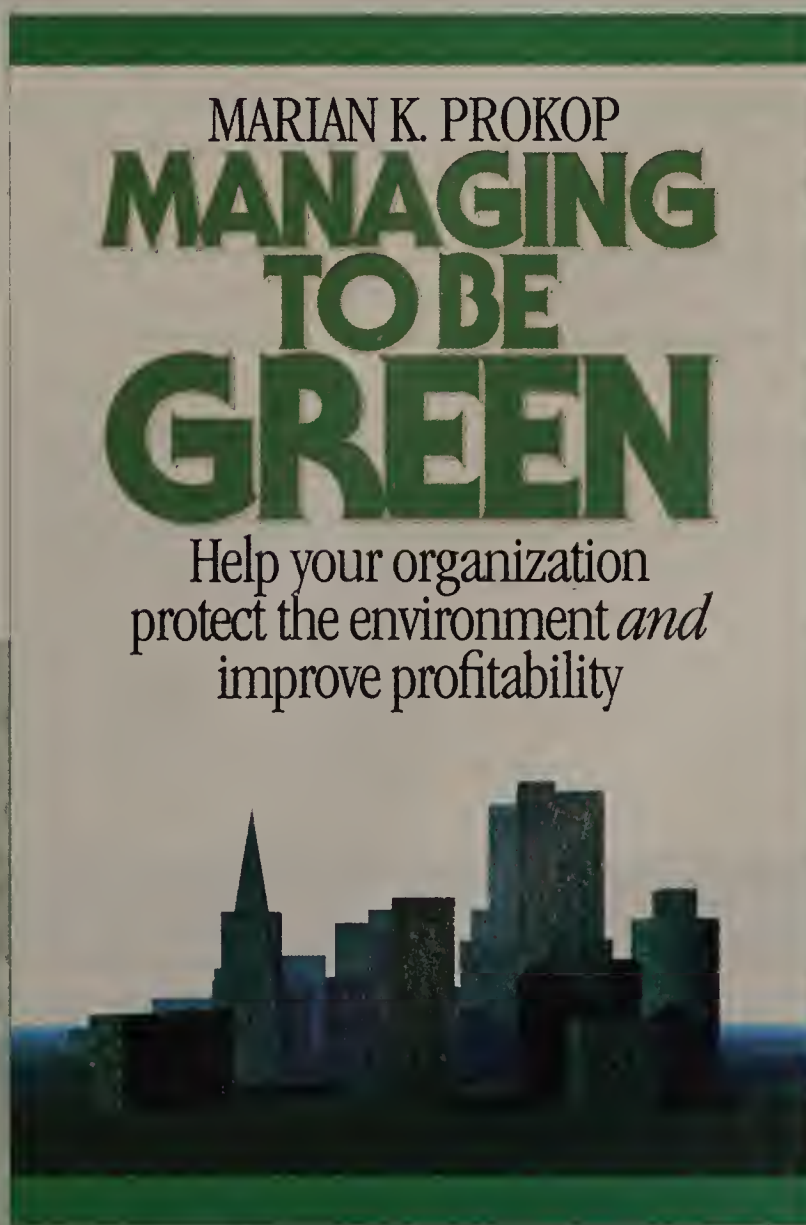


4 Add realism with atmosphere.

Atmospheric effects, such as fog or mist, can provide the visual cues for scale and distance that make a finished model look more realistic. You can use StudioPro's preset effects or customize one of your own. To get a fog effect, click on the Air tab on the Environment palette; choose New Fog from the pop-up menu; and then enter specs for color, distance, and visibility in the Fog dialog box. To get the effect of a blue sky, Odam made the fog blue, since after a certain distance, 3-D fog becomes opaque. The fog will appear as a named icon on the Resource palette. To apply it, drag and drop it onto the model. Check your work by clicking on the big camera at the bottom of the Tool palette. You'll see a fast-rendered version of your scene.

5 Render your model, and composite it with 2-D trappings.

Now it's time to render your model — in other words, apply all your settings. A high-quality renderer is the best choice when you plan to print your results. Open the Render dialog box (Rendering: Render), and choose the best-quality Raytracing (Settings: Raytracing: RT Best). Then choose Fine and Extra Smooth from the Texture Detail and Image Quality pop-up menus, respectively. Using the size fields, specify the size you want your final image to be, and then click on Render. Save the finished image as a TIFF file. Odam opened his cityscape in Photoshop, used the Magic Wand tool to select the blue background, and deleted it. He then used the Marquee tool to select the two areas where the horizon meets the white background and applied a vertical motion blur (Filter: Blur: Motion Blur) to soften the edges and maintain the fog effect. He saved the finished image, imported it into Adobe PageMaker, and combined it with type and borders.



They say Agfa wrote the book on prepress and digital imaging.

They were right.

**Get this essential prepress
and digital imaging resource
for just \$95.**



The publishing tools we use today are totally different from those we used a few years ago. And they continue to change at an incredibly rapid pace. That's why it's important to stay up to speed on the latest digital color prepress techniques and technology.

The Agfa Digital Color Prepress Deluxe CD-ROM Boxed Set, a publication and multimedia package, gives you objective and essential information to be well versed in many areas. It's an unmatched resource of knowledge, offering practical tips and time-saving advice from the world leader in digital imaging and color reproduction. And right now, it's only \$95, a savings of \$25.

The Digital Color Prepress Deluxe CD-ROM Boxed Set features the *Agfa Guide to Digital Color Prepress*, a multimedia Macintosh CD-ROM containing over 630 MB of helpful, authoritative information covering all aspects of prepress and print production. It also includes five popular publications: *An Introduction to Digital Color Prepress*; *A Guide to Color Separation*; *Working With Prepress and Printing Suppliers*; *An Introduction to Digital Scanning*; and *An Introduction to Digital Photo Imaging*.

This award-winning collection of educational publications is one that no graphic arts, imaging, or printing professional should be without. More than one million copies have already been printed. Compact, easy to understand, and filled with color illustrations and photographs, you'll frequently refer to them as you continue to gain expertise on the job.

To order your set and receive a **FREE Meet the Family** brochure describing Agfa's complete library of educational publications, call **1-800-395-7007**. To order on-line: **www.agfahome.com**

AGFA 

Agfa Educational Publishing
P.O. Box 787
Randolph, MA 02368-0787 USA
tel: 1-800-395-7007
fax: 1-781-341-6261

Circle 158 on reader service card

AN INTERNET CONNECTION is crucial for small businesses today. But before you spend a dime on another modem, let us help you decide what type of connection and services make sense for your business.

Bare-Bones Business Access

In a small office that has only a few potential Internet users, the quickest and least-expensive way to get your business online is the same method most individuals use: get a modem (\$100 to \$200 on average) and an account with an ISP. This method works well if most of your office's Internet activity consists of sending and receiving e-mail and browsing the Web. Most ISPs will sell you a single dial-up account (for billing purposes) with multiple mailboxes for e-mail (one for each person in your office). Extra mailboxes are often

as little as \$5 apiece or free with a basic business account. Of course, you'll still need a modem for each user.

If you want to extend your business onto the Internet, consider getting your company its own *domain name*. To do so, have your ISP request a name like *yourcompany.com* from the InterNIC (the Internet Network Information Center). A domain name costs about \$50 per year (with a mandatory two-year payment up front).

If in addition to a domain name you want to have a Web site, the next step is to rent space on the ISP's Web server to store your site. Just create the pages on a Mac in the office and FTP them to your remote site, and your business will be on the Net.

The Intermediate Route

At some point, the low-budget method just won't cut it. If you have several people in your office who access the Net frequently, buying each one of them a modem can get expensive. Also, for such offices, the budget method's connection is probably too slow.

The first step toward solving these problems is to get a *router*—a device that connects your local network to the Internet. In many cases, the administration software that comes with the router is easy to use, designed for use by part-time network managers. Just add the router to your Ethernet network and configure the modem or ISDN BRI (basic rate interface, a device that makes an ISDN connection), using information your ISP provides.

With a router in place, the users on your network can reach the Internet without needing individual modems or accounts. The router acts as the hub of all Internet activity, so only the router needs to connect. Every computer still needs its own IP (Internet Protocol) address, which your ISP provides.

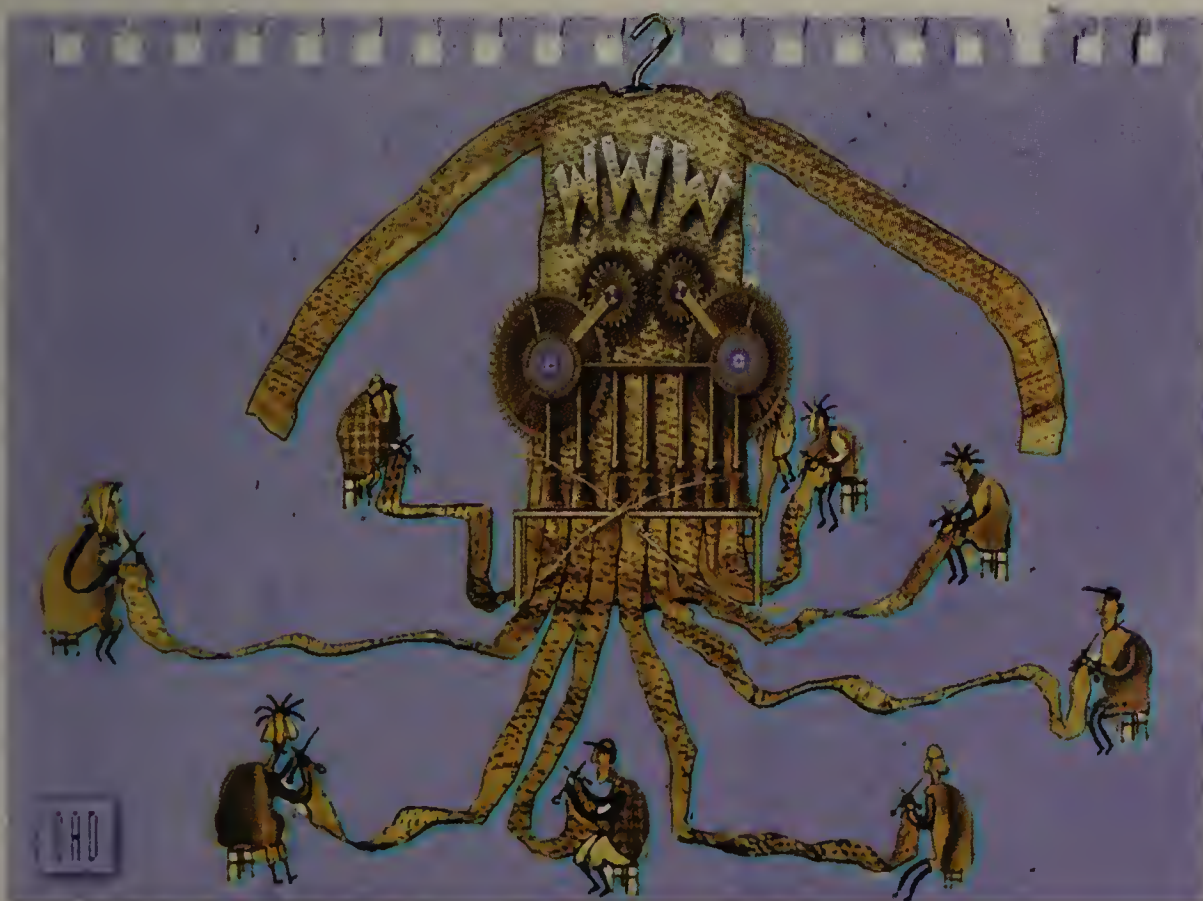
The latest trend in routers is all-in-one Internet-access devices: Each has a router, an Ethernet hub, and built-in analog-modem or ISDN BRI ports. For those who don't have a network or who need to expand an existing one, such routers provide a great way to add a few Ethernet ports and to get a connection to the Net.

One of the most distinctive of these do-everything devices is Ramp Networks' WebRamp M3 (\$349 list; see review, October '97, page 42). It allows users on a network to share up to three analog modems for general Net access and lets a single

By Shelly Brisbin
 netuser@macuser.com

Open for Web Business

Three ways your small business can make its grand entrance onto the Internet.



user apply multiple modems to one ISDN-like, speedy Internet session. Dayna Communications was readying Internet Station, a similar device, as we went to press. One drawback of these two devices is that you need an Internet account for each modem you connect to them.

If you need more speed than analog modems can offer and have lots of active Internet users, consider getting an ISDN router. Farallon Communications, Ascend Communications, Shiva, 3Com, and Ramp Networks, among others, offer single-BRI ISDN routers for \$700 to \$1,000 apiece. You'll have to navigate the tricky waters of ISDN setup, but some router makers and many ISPs make it easier by offering procurement and support packages for new ISDN customers.

With a new ISDN connection, you need to configure IP addresses for the router and reconfigure your Macs. If you've moved from MacTCP to Open Transport (OT), changing a Mac's configuration is a snap. Simply create a template TCP/IP configuration, using one Mac, and import it into all the others.

If you're not comfortable with the prospect of adding ISDN — definitely a major overhaul to your network — be sure to look for an ISP that's familiar with both ISDN and the Mac and can guide you through the configuration process.

Total Server Control

Storing your Web site on an ISP's server is quick and easy, but you may want to have more control over your site. To gain ultimate control, move your Web server in-

house. Many businesses opt to move from ISP-hosted Web sites to Mac-based ones, because it makes it easier to add content, features, and special configurations that may not work with your ISP's probably-UNIX-based system.

You can add Web-server plug-in and CGI (Common Gateway Interface) software yourself that configures the Mac to perform specific tasks, such as connecting a FileMaker Pro database to your Web site, and you don't have to hire a UNIX consultant to do it. You can also buy or download Mac-based tools that speed up site customization, analyze your site logs, and generally make the server easier to administer. With a Mac-based SMTP mail server, for example, you can maintain your own e-mail lists and manage interoffice e-mail better.

When you're ready to implement your own server, just connect it to your network with a router; give the server a static IP address (you'll first need to acquire one from your ISP for each server); and add Web-, mail-, or other server software.

You will likely need to get a dedicated connection, so users can access your site whether it's 5 P.M. or 3 A.M. Many ISPs offer dedicated modem accounts — connections that stay up 24 hours a day — for somewhat more than a standard dial-up account (\$50 to \$100 per month). You and the ISP must each dedicate a phone line and a modem to your connection.

Although that approach gives you a continuous connection, you'll reach a maximum transfer rate of only 33.6 kbps. That's pretty poky. In fact, it's probably

intolerably slow for a busy site. You can squeeze extra speed out of a dial-up connection with ClearWay's FireSite software (\$499 list). FireSite dynamically analyzes your Web site and transfers graphics files to your ISP's Web server, keeping your connection free to transfer text files and speeding up the overall connection for users of your site.

If the connection is still too slow, it's probably time to upgrade to a dedicated ISDN line — the next step in both speed (from 64 kbps to 128 kbps) and price (\$100 and up per month). You can usually opt for either one or two dedicated ISDN channels. To save money, first try out *one* 64K BRI channel and keep an eye on the usage of your site. Upgrade to two channels only if your Web server gets bogged down with hits.




If the sticker shock from a dedicated connection and server hardware and software is a bit hard to take, keep in mind that you don't need to pay for individual accounts, Web space, or modems for everyone in the office.

Do Your Homework

The best way to choose the right mix of Internet services and in-house hardware is to know before you go shopping what you need and can afford. The ISP business is extremely competitive, so you'll also be doing yourself a favor if you shop around. We found that prices vary widely, even among ISPs in the same city. ☐

Shelly Brisbin is a freelance writer based in Austin, Texas.

Connection Selection *The right connection for the right user*

	Type of Connection	Pros	Cons	Ideal Users
BASIC 	Analog modem on each desk	Simple setup; fast access for individuals	Expensive for large groups (more than three people)	Home-office users
	Shared ISDN line	Very fast connection for one or two users	Expensive	Home/small-office users needing fast Web or file-transfer access
INTERMEDIATE 	Router with dial-up connection	Users can share equipment and access; easy to manage a group of users; no need for multiple accounts	Slow when several users need access continuously	3 to 5-person offices needing e-mail service and light Web access
	Router with ISDN	Fast access to mail, Web, and FTP; shared resources; easy to manage	Can't support in-house Web, FTP, or SMTP servers	3 to 20-person offices with moderate to heavy Web-access needs
HIGH-END 	In-house server with dial-up connection	Cheaper than ISDN; provides in-house control of Web site	Too slow for many busy Web sites	Small-scale Web publishers
	In-house server with ISDN connection	Supports full-featured Web sites; convenient management	Expensive; requires dedicated connection	Businesses with Web-based product catalogs, multimedia Web publishers

1996 It's the 10th revision and it's a rush.

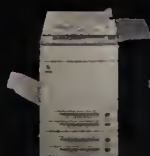
It's got to be perfect, but color output costs too much.

What you say about color printing can't be printed here.

1997 Introducing the Xerox DocuColor 5750. It adds new words to your vocabulary.



Now you can get color on-budget and on-time. Because the Xerox DocuColor 5750 Digital Color Copier/Printer offers high-quality continuous-tone color at an affordable price. In fact, you can get a connected unit for the cost of a stand-alone color copier/printer. At 6 ppm, it prints Pantone-licensed color and sharper black text. And no one offers more certified front



DocuColor 5750

ends (EFI Fiery, DocuPress, Splash). What's more, the DocuColor 5750 is only the newest in the Xerox family. The Xerox Regal 5790 is a proven workhorse. And the DocuColor 40 delivers consistent quality color at a breathtaking 40 ppm. All come with our Total Satisfaction Guarantee. Visit our Web site at www.xerox.com. Or give us a call at 1-800-ASK-XEROX, ext. 670.

THE
DOCUMENT
COMPANY
XEROX

XEROX® The Document Company®, the digital X and the identifying Xerox product names and numbers herein are trademarks of XEROX CORPORATION. EFI Fiery®, Splash, and DocuPress are trademarks of their respective owners. 36 USC 380.

Circle 100 on reader service card

Free Internet Access

FOR EVERY NEW MEMBER YOU REFER,
YOU WILL GET A MONTH OF **FREE** INTERNET ACCESS.
IT'S THAT SIMPLE.

No catch, no strings - the program is open to all EarthLink members.

Every month, we give thousands of our members free access. In fact, some of our members refer so many people, they never have to pay for their Internet access.

Our free access program is just one of many benefits EarthLink members enjoy. If you're not getting free Internet access from your current provider, give us a call.

1-800-319-9638, ext. 108

*For details on EarthLink Network's Referral Program check out http://www.earthlink.net/company/free_access.html

© 1997 EarthLink Network, Inc. Trademarks are the property of their respective owners. All rights reserved.



September 9, 1997
Internet Service Provider



It's your Internet.™

EMAIL
UNLIMITED INTERNET ACCESS
FREE 24-HOUR HELP LINE™
PERSONAL START PAGE
33Kbps/56Kbps
NATIONAL ISDN
FREE 2MB WEB SITE
OVER 810 LOCAL DIALUP #'S
NEWSLETTER
INTERNATIONAL ROAMING
NEWSGROUPS
FREE INTERNET USER GUIDE
COMPLETE SOFTWARE FOR WINDOWS OR MAC
CHOICE OF BROWSER
800# ACCESS OPTION

Circle 11 on reader service card

SAVE 67%

YES! Sign me up for Macworld at the money-saving rate I've checked:

☐ **SAVE 60%** \$24.00: One year/12 issues

☐ **SAVE 67%** \$39.97: Two years/24 issues



FREE CD-ROM!

You'll receive the Macworld Clip Art CD — containing an extensive collection of clip art images, digital stock photos and fonts. FREE with your paid order.

NAME _____ (Please Print) 4SMN7

COMPANY _____

ADDRESS _____

CITY _____

STATE _____

ZIP _____

☐ Payment enclosed.

☐ Bill me later.

Annual newsstand price \$59.88. Non-U.S. add US\$16 per year; Canadian GST included.

Macworld®



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 1167 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld[®]

Subscription Department
PO Box 51666
Boulder CO 80323-1666



By Jason Snell

jason@macuser.com

Master of Your Domain

What's in a name? If you're talking about a domain name, it can mean a real pain in the neck.

NOBODY EVER ACCUSED the Internet of being simple. Truth is, typing a URL into your Web browser is only the beginning of a complicated process that eventually leads you to the right computer somewhere out on the Net. The advent of domain names (such as www.macuser.com) has made surfing simpler in some ways but can cause you headaches in others.

I Am Not a Number!

You may think that typing www.something.com is not particularly intuitive, but it sure beats the process going on behind the scenes — a process so complex that one little error can cause a Web browser to fail to connect to a Web site that's actually up and running or can even make a live Internet connection look as if it's as dead as a dinosaur.

The reason the machinations of the Internet are complex and confusing is simple: The Net was created by a bunch of UNIX geeks a couple of decades ago. It's thanks to them that every machine on the Internet has its own unique address — a string of numbers (called an IP address) such as 155.40.192.69. That doesn't particularly roll off the tongue. To make things easier, we now use names you can actually remember, such as www.macuser.com.

What's not simple is translating

between numbers and names. It can be a source of connection problems. It all starts when you type a domain name into your Web browser. Your computer has to look up that name and convert it back into its number in order to connect to the Web site's computer. To look up a name, your computer has to query a computer called a *domain-name server*.

No single one of the thousands of name servers knows all the keys for translating domain names into IP addresses, and vice versa, on the Internet, but each server knows the names and numbers of



every user's computer in its corner of the Net. So the name servers on the Net must talk to each other.

As a result, if just one name server stops talking to all the other name servers, you'll no longer be able to look up any addresses controlled by that machine. And if your Mac stops talking to your name server, it'll seem as if the Internet has shut down — even though you're actually still connected. These name-server errors can be one of the most frustrating aspects of being on the Net, and there's little a user can do about it.

Domain Event

Since we have to live with the domain-name system, why not make the best of it? Get your own domain. But be prepared for a few hurdles.

One caveat is that there has to be a central body that makes sure no names are duplicated. That central group is called the InterNIC, and it's what you apply to if you want your own domain name — but it'll cost you. Registering a domain with the InterNIC costs \$50 a year, with a

mandatory two-year payment up front.

But before you register your domain, you've got to have at least two name servers configured and fill out a scary-looking form. This stuff is not for mere mortals. Your Internet service provider can fix you up, usually for a fee, or if you're *really* lucky, you'll have a friend or two (as I do) who are UNIX geeks and who can configure their name servers to handle your domain too.

Once everything has been configured and paid for, you're almost ready to experience the joy of pointing people to www.monkeypatrol.com and of getting mail at rhesus@monkeypatrol.com instead of funneling everything through MyBoringISP.com. If you've got your own personal Web server, it's a snap to make it answer to a new name. If you're using your ISP's Web server, however, you'll need to ask the ISP to configure it so that your home-page moniker isn't some abomination like www.monkeypatrol.com/~larry/monkeypatrol/, which abandons the beautiful, delicate simplicity of www.monkeypatrol.com.

Teaching a single Web server how to pose as different servers with different names isn't hard. If instead your ISP is your Web host, you should find out whether it's willing to configure its server to give you the name you want — and find out how much it'll cost. For Mac Web servers, there are several products that let your server pose as other servers, including Open Door Networks' HomeDoor (www.opendoor.com/homedoor) and Clearway Technologies' ClearlyHome (www.clearink.com/fun_stuff/plugins/clearlyhome/).

One last word of warning: If you're considering registering your own domain name, you may be disappointed. Original and easy-to-remember domain names are going fast, and once a domain name has been taken, it's gone — unless the owner of that domain fails to pay the InterNIC bill. So make a list of a bunch of possible domain names, and prepare for the worst — you may end up crying bitter tears, as I did when I discovered that I'd been beaten to the punch for monkey.com, jason.com, and teevee.com. In the end, you can become master of your domain only if you're the first one to get there. ☹

Jason Snell, MacUser senior editor, online, lords it over the intertext.com and teevee.org domains, with the help of his UNIX-geek pals.

Matrox powers your Mac into the next Millennium

Introducing Matrox Millennium II - Superior performance for PCI Macs



Laying out that new ad. Putting together a cool video presentation. Or adding the finishing design touches to a web page. Time is money, and you need your Mac to do it all. Fast. The new Matrox Millennium II for

Mac delivers uncompromising performance for all your professional needs. Quark Xpress, Photoshop, illustrations, and Web designs can be scrolled, zoomed and loaded in a matter of seconds. Its powerful, dual-ported WRAM memory and 250 MHz RAMDAC process true color images with lightning speed. Upgradeable to 16 MB, Millennium II for Mac displays graphically intensive files at resolutions as high as 1920 x 1200 without missing a beat. What's more, with hardware accelerated Quick Draw 3D and a 32-bit Z buffer, you can bring 3D texture mapped graphics into your 2D design applications and manipulate them in real-time. Millennium II also offers accelerated MPEG1 video playback and support for QuickTime video - making it an ideal solution for watching computer based training videos, CD movies, and educational CD-ROM titles.

With over 250 awards of distinction, Matrox is the leader in designing state-of-the-art graphics accelerators. When choosing an upgrade for your Mac, choose a company you can rely on.

Choose Matrox.



Matrox Millennium II for Mac

- Ideal for graphic designers and power users
- Upgradeable to 16 MB of WRAM

matrox

Circle 24 on reader service card

1-800-786-9836 <http://www.matrox.com/mga>



1-800-456-8000



1-800-999-9382



1-800-237-8931





By Bob LeVitus and Christopher Breen
 helpfolder@macuser.com or tips@macuser.com

Help Folder

The great scanner/
 camera debate, reviving
 old PowerBooks, and
 faxing your e-mail

Scan or Cam?

I'd like to have photos for my Web page. Would I be better off using a scanner or a digital camera? I do have an excellent regular camera.

Harvey Waxman, via the Internet

Chris: We solicited the opinions of *MacUser* staff members who have had experience with the Web, scanners, and digital cameras. "Surely," we reasoned, "someone will stick up for the digital camera."

Bob: But no one did.

Chris: Although epithets were thrown fast and furiously by some of the editors, our eminent experts agreed on this: Go with the scanner.

Online Associate Editor Philip Dyer said, "I don't know if that fatheaded editor Roman Loyola would agree, but a standard camera/scanner combination is the only way to go — especially since Mr. Waxman already has a good camera. Good-quality digital cameras are so expensive that you can pay less for a decent camera and scanner and still get a better image."

Reviews Associate Editor Roman "The Man" Loyola agrees: "That dork Phil Dyer has a good point; if you're planning to ever make a high-quality printout of what

you shoot, an analog camera and a scanner is the way to go."

With tongue firmly planted in cheek, *MacUser* Labs Project Leader Rick Oldano opines, "Why, everyone knows that the perfect Web image should be captured on a Kodak EOS/DCS1c camera, which starts at \$30,000. Throw in a few lenses and other necessary accessories — I estimate the cost to be an additional \$30,000 — and you *might* have the beginnings of a competent system."

Bob: I guess I'm the only one here who can see the usefulness of affordable digital cameras. May I point out that *MacUser* uses digital cameras for many of the images found on its Web site? For getting pictures up in a hurry, especially from remote locations such as trade shows, nothing beats a digicam. Just shoot, download the image to a Mac, tweak it, and upload the image to the Web site.

Web images don't need to be crystal-clear. Remember: High resolution means high bandwidth, which means long downloads. The inferior picture quality of budget digital cameras is not usually an issue for a Web site. On the Web, a picture that draws quickly is more important than one with perfect color saturation.

Chris: Bob's right, portability and convenience are the best aspects of digital cameras. But unless you're spending loads of time working remotely, I can't think of a compelling reason to choose a digital camera over a scanner.

Jazzy Startup Volume

How do I use a cartridge in my internal Jaz drive for startup?

Joe Tong, via the Internet

Chris: To start up from the Jaz cartridge, you have to do two things: In the Startup Disk control panel, choose the cartridge from which you want to start up, and make sure that it is inserted at startup.

Bob: It sounds elementary and it's fairly straightforward at startup, but there's a little trick you need to know when you restart, 'cause restarting your Mac will eject the Jaz cartridge.

If you don't push the cartridge back into the drive lickety-split, one of two things will happen:

1. If you have a hard drive or another device with a valid System Folder, your Mac will go to that device at startup.

2. You'll see the flashing question mark until you insert the Jaz cartridge.

Just remember that when you restart, you always have to manually push the Jaz cartridge back into the drive before your Mac starts booting from anything else.

Slow-Net Blues

Any advice for upgrading my PowerBook 180 so I can surf the Net more quickly?

Canny Cheung, via the Internet

Bob: My first bit of advice is not to bother looking for a new internal modem. The world has moved on, and the only way you're going to find a faster internal modem for your PowerBook 180 is to get a used one.

Chris: Unfortunately, Bob's right. The portable-computing world has settled on PC Cards for such niceties as modems and (for the 1400, at least) Ethernet connections. Internal PowerBook modems are a thing of the past. If you had a 500-series or later PowerBook, you could get a fast modem card and use the computer's PC Card capability, but I'm afraid your 180 was born too soon to accommodate a PC Card. However, Intermart Systems (www.intermarsys.com) is one of several companies that sell external PC Card readers (see Figure 1). These connect through the SCSI port of your PowerBook and open up a world of PC Card possibilities to you.

Of course, you can also get a less-expensive *external* modem. Your 180 still has the requisite modem port, and there's nothing to stop you from jacking an external into the port. You'll lose a few of the benefits of an internal modem: The Wake on Ring feature won't work, and you'll have yet another wall-wart-bearing doodad to lug around — but at least your digital alter ego will skate across the Net more expeditiously.

Bob: There are other ways to improve your PowerBook, however, and I'd recommend these upgrades for any variety of Macintosh: Buy more RAM, and get a higher-capacity hard disk. If your 180 doesn't have its upper limit of 14 MB of RAM, you should top it off. Likewise, the capacity of the hard disk that came with your PowerBook is too small for today's applications. APS has a 1-GB drive that will fit in any PowerBook except the poor old PowerBook 100. It will set you back 600 clams, but if you're tight on storage, you'll find it worth every nickel.

Chris: To find out how to upgrade many other aging Macs, take a look at "Never Say Die" (July '97, page 99).

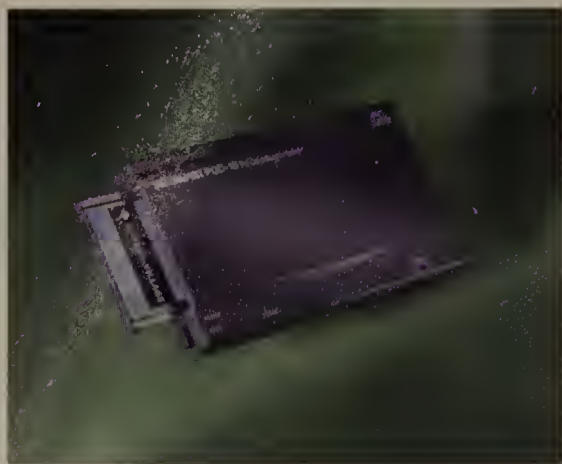


Figure 1 • One way to make an old Mac new again is to attach a PC Card reader, such as the PCD-10 (\$349 list), from Intermart Systems.

Put Your Best Fax Forward

I'd like to have my computer forward incoming e-mail to a remote fax machine. Is there software that can do such a thing?

Frank E. Parcels, via the Internet

Bob: Uh-oh, I sense that Macro Boy has something in mind . . .

Chris: Indeed, I do. Frank, there's no reason to hunt for an application to perform such a relatively simple task. With a little planning and the right e-mail, fax, and macro software, it's a cinch.

But first I should explain that depending on the kind of software you have, you may go about this differently. The overall concept should be the same, however.

First of all, you'll need an e-mail program that allows filtering — a process whereby the application performs an action based on criteria you set up. Both Qualcomm's Eudora Pro and Claris EMailer have filters — although EMailer calls them Mail Actions.

Here's where the planning begins: Decide whose messages you want forwarded, and create a filter for that person's (or those people's) e-mail. For example, if I wanted to fax-forward messages only from Bob, I'd select From:Bob LeVitus as one of the filters (see Figure 2).

Next, specify Print as the postfiltering action. Now go to the Chooser, and select your fax modem's driver. Because I use a Global Village modem, I'd choose the GlobalFax icon. When you return to your e-mail program, the Print item on the File menu should now read Fax.

Now the fun begins: the macro. The basic idea behind the macro is that when the Fax/Print window appears, the macro selects from your fax address book the name of the person you want the fax directed to, moves that name to the Destination field, and clicks on Send.

I've pulled this trick with both WestCode Software's OneClick and CE Software's QuicKeys. As much as I'd like to go into agonizing detail about how I created the macros for these programs, to save valuable column space I'm posting them online instead. You can find them at www.macdownload.com.

Bob: Excuse me for butting in on the geek-fest you're holding here, but may I suggest a solution that's a tiny bit simpler?

Chris: Only if you agree to include one techie element.

Bob: Fair enough. You can also use the filtering option Chris is so fond of to create an automated response that reads, "I can't be reached by e-mail right now. Please fax me at this number: xxx-xxx-xxxx." As long as the person sending the original e-mail picks up his or her messages in a timely manner, you'll soon have a fax sent directly from the source.

Zippping Between Machines

Can I download Windows 95 files to my Mac from an online service, save them to disk, and then install them on a Win 95 machine? Will my Zip drive help in transferring the files?

James Dillon Jr., via AOL

Chris: Let's see, I count four questions there. The answers — in order — are:

1. You betcha. 2. Uh-huh. 3. *Oui! oui!* and 4. Does *ursus americanus* deposit its waste products in forested regions?

Bob: In other words: Yes.

Chris: But you have to plan ahead.

To begin with, unlike Macs, not all PCs are equipped with a SCSI port — and you'll need that SCSI port to connect your Zip drive to the PC. You must add an extra card to many PCs to get SCSI. Check your Windows machine to make sure that it supports SCSI. If it doesn't, you'll have to buy either a SCSI card or another Zip

drive with a parallel-port interface or just skip the Zip altogether.

If the PC does have SCSI connectors, examine them. Many recent Wintel boxes sport a SCSI-2 port — these require an adapter in order to work with the SCSI cable packaged with a Mac Zip drive. Iomega's Jaz drives come with both a SCSI-2 cable and the Mac adapter.

Windows 95 is surprisingly unaware of Mac disks. If you drop a Mac-formatted cartridge into a Zip drive connected to a PC, Windows will pitch a fit. Trying to access your Mac-formatted Zip cartridge will result in Windows asking if you'd like to reformat it. So here's an important tip: Format your Zip cartridge on the PC. Once you've done that, it's a simple matter to copy the files to the Zip drive on the Mac and then tote it all to the PC. With the PC Exchange control panel installed, your Mac won't even flinch when you insert a PC-formatted Zip.

Bob: Listen, Junior, all this dragging of drives can be, well, a *drag*. If you're talking about only a couple of megabytes' worth of stuff, you may want to skip all this and just copy the files to floppies. In this kind of situation, I use Tom Brown's \$15 shareware program ZipIt to compress a bunch of files in a PC-friendly .zip archive and then segment the archive into chunks that fit onto DOS-formatted floppies (Aladdin Systems' StuffIt Deluxe can do the same, albeit for more cash).

You don't need to run out and buy a box of DOS-formatted floppies either. Just toss any old HD floppy into the drive, select Erase Disk from the Finder's Special menu, and choose DOS 1.4 MB from the Format pull-down menu. ☒

Bob LeVitus is the author of Mac OS 8 for Dummies and the Mac columnist for the Houston Chronicle. Christopher Breen recently coauthored The Macintosh Bible Guide to Games.

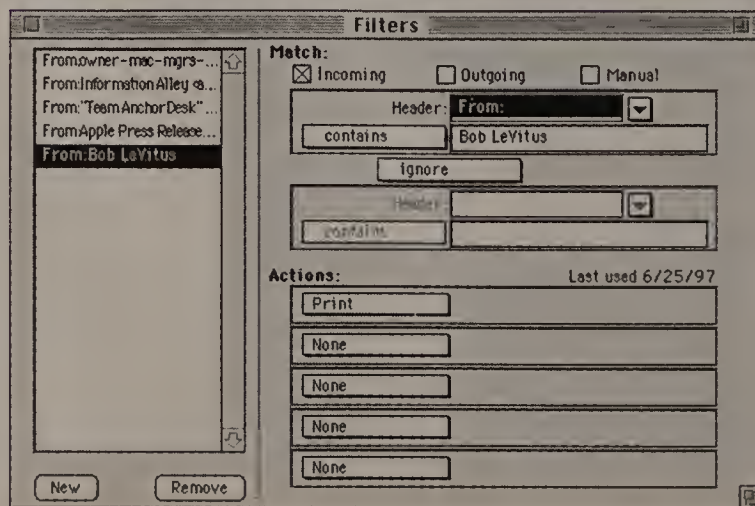


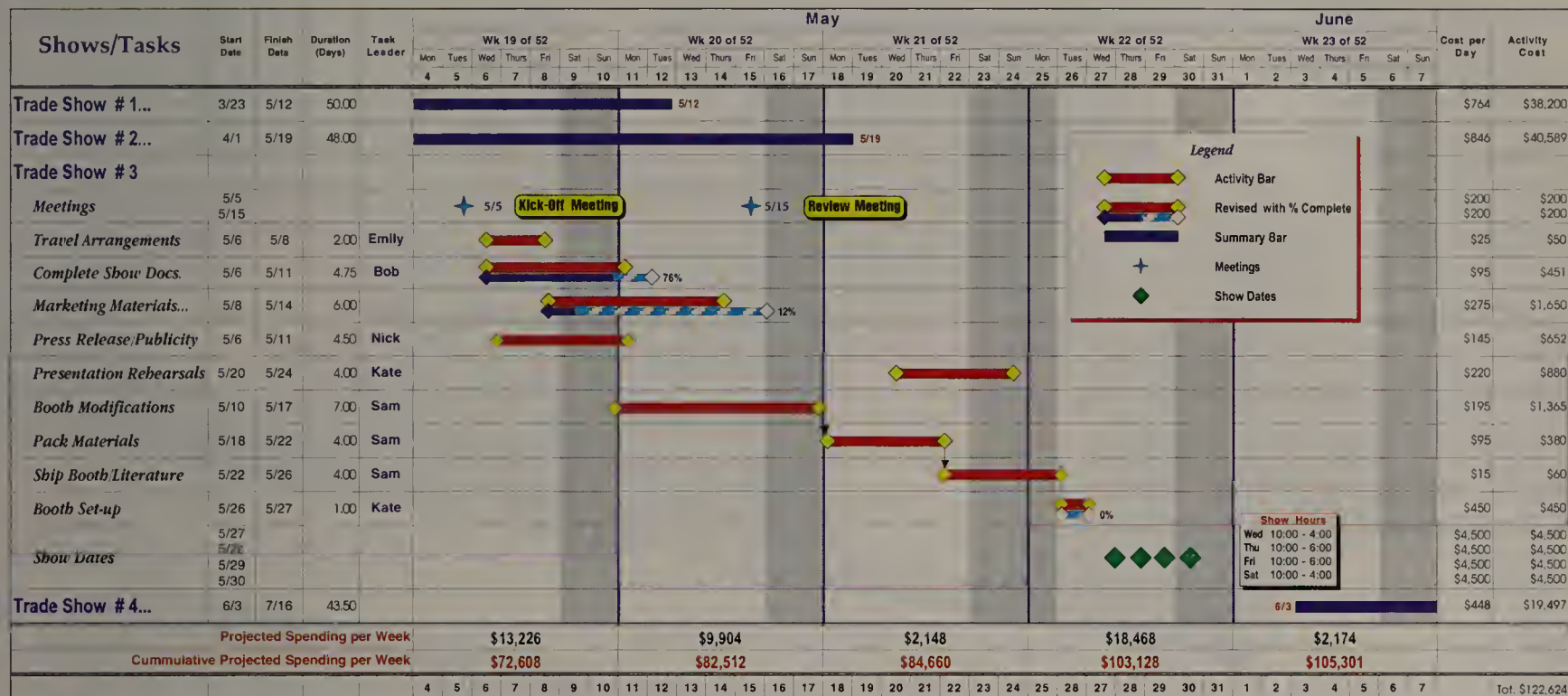
Figure 2 • Faxing e-mail is a piece of cake if you start with an e-mail program that allows filtering, such as Eudora Pro (shown here) or Claris EMailer. You'll also need to create a macro, using WestCode Software's OneClick or CE Software's QuicKeys.

Project Scheduling Made Easy.

New
Version 5.0

Trade Show Schedule

Page 1 of 1



123 Main Street
Washington, DC 20111

Created by: Jim Martin
Trade Show Production Mgr.

Filename: shows.ftt
Last Updated: 5/20
cc: KF, JM, BT, NW, SF

It's easy to use. FastTrack Schedule is intuitive and flexible, meeting all your project scheduling needs. It works how you do, letting you schedule projects quickly, easily, but with the control your projects require. You don't have to be an expert in project management to keep your projects organized; you just need the right tool to get it done. It's that simple.

It's easy to learn. Can you afford to waste time learning software over and over again? Now you don't have to. With online help systems, tool tips, and bubble help, you'll have quick solutions at your fingertips. And with FREE and UNLIMITED technical support, you'll always stay on track.

It's easy to buy. We give you a free demo to try the software. If you like it, call us and we'll activate your demo on the fly. Plus FastTrack Schedule is 1/3 of the cost of most project management software, so it will fit your budget as well. Call today for a free demo or download it from our web site!



Get on track!
Call to order, for more information
or download a **FREE DEMO** today!
(800) 450-1982
<http://www.aecsoft.com>

Here are just some of the new features you'll find in Version 5.0:

- Calculation Fields
- Time Period Summaries
- Choice Lists
- Legend Builder
- Column Summaries
- Export directly to HTML, GIF, JPEG
- Copy Page vs. Copy Schedule
- Context Sensitive Mouse Clicking
- Finish-to-Finish Linking
- plus many more...



Upgrade to Version 5.0 Today!

**Simple Scheduling.
Impressive Power.**





ONLY THROUGH THE EYES OF SPLASH

Imagine bankable spot color from your color copier without changing your workflow. Your imagination can become reality only through the eyes of Splash.

Whether it's two color plates or 100, Splash will print your file accurately, from any capable application, by intelligently using the copier's full range of color without affecting process colors.



If you're tired of losing in the game of spot color proofing — or worse yet *matching spot color tints* — consider the Splash one-shot workflow solution: pick the spot color you want and print. That's it.

Forget substituting CMYK values or converting spot to process colors. With Splash, it's accomplished automatically and transparently (traps and overprints too, of course).

Only Splash servers can provide the easiest, most professional way to print and proof spot colors — your way. So sit back, relax and enjoy the view. From now on, you're calling all the shots.



Splash
Color Servers

WHEN YOU'RE SERIOUS ABOUT COLOR

For more information visit the Splash website at
<http://www.SplashTech.com>
or email **salesupport@splashtech.com**
or call **+1 408.328.6395**

X ©1997 Splash Technology. Splash and the Splash logo are trademarks of Splash Technology, Inc. Splash products support the Xerox color systems and Fuji Xerox Acolor copiers. Splash products are sold by Xerox worldwide, Fuji Xerox, and select Xerox resellers.

Circle 54 on reader service card

IT WAS A STARLIT NIGHT, and I was sitting with some friends who had just moved to the country. One of them mentioned that he'd recently picked up that old guitar he had lying around. He was finally getting serious about learning to play. Having endured the struggles of teaching myself to play, I wondered what advice I could give him. I could point him in the direction of a good teacher or maybe send him literature from the massive piles I've collected over the years, but that would cause him more work than pleasure.

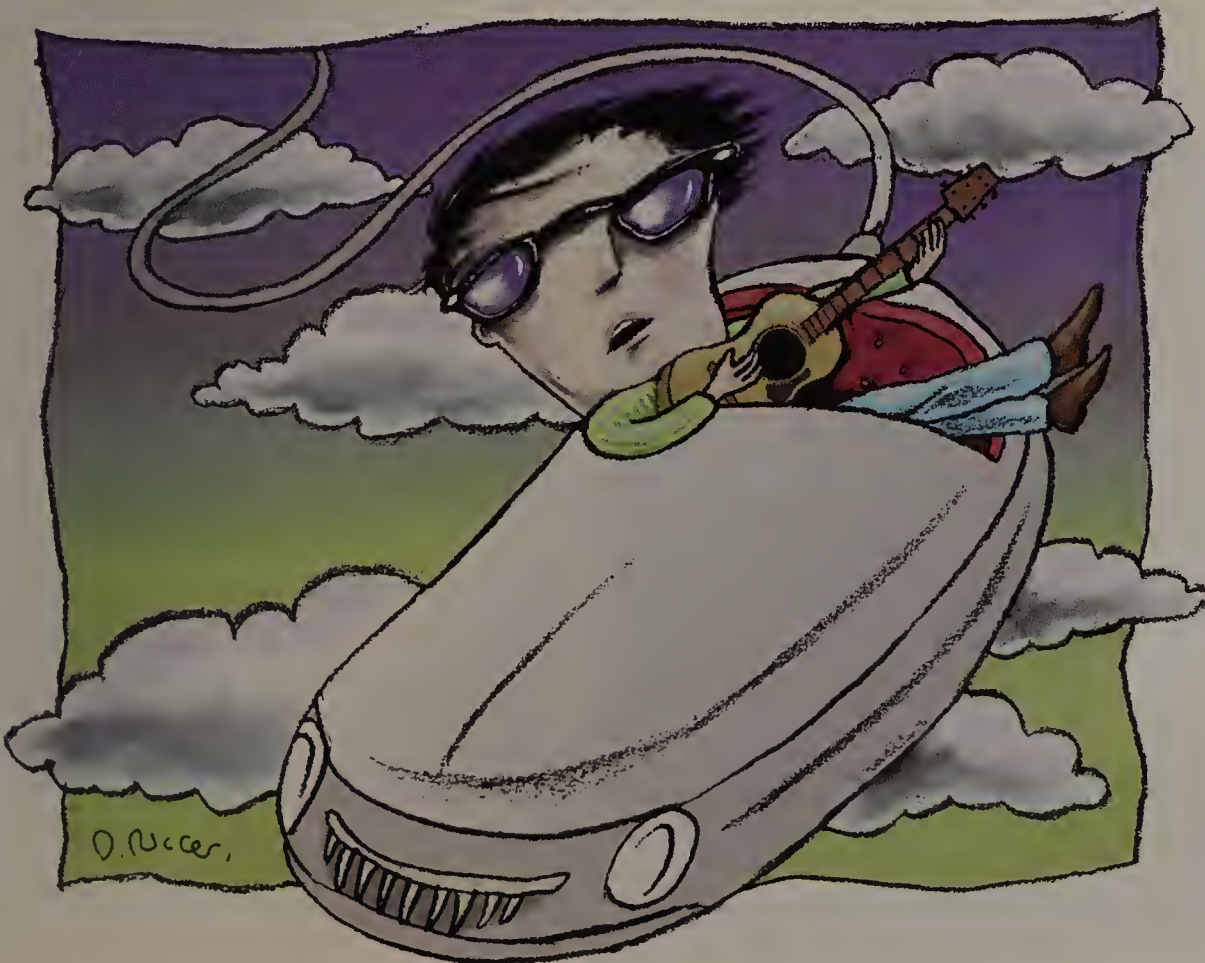
Then I remembered that my friend had just gotten a new Macintosh. If I steered him toward the right Mac software, the learning could be simply fun. As the answer came to me, I shouted into the serene evening air, "You can use your Mac to teach you how to play!"

By Martin Wong

maxuser@macuser.com

Mouse of Blues

You don't have to be intimidated by pentatonic scales, augmented fourths, or riffs — your Mac can help you learn to play the guitar at your own speed



Get in Tune

There's so much to learn about the guitar — where's a good place to begin? A bunch of programs are geared toward those just starting out. Some are clearly better than others, and different ones are suited to different learning styles.

If you're the type who likes to learn the basics backward and forward before charging on to advanced concepts, eMedia's **Guitar Method** (♦♦♦½, \$59.95 list) is one of the better choices for you. In over 60 lessons, it thoroughly covers the basics, such as holding the guitar correctly and playing a minor scale.

The beauty of this program is that it keeps you entertained while you're learning to play. That's partly because it gives you the satisfaction of immediately learning familiar songs, such as "Amazing Grace" and "La Bamba," while you're learning basic concepts. The application also keeps you engaged by varying its lessons: You learn proper finger placement by watching videos, you get tips from audio recordings and written text, and you learn songs by playing along with your Macintosh.

Despite the thoroughness and variety of the instruction, this program has its drawbacks. The video is jumpy in spots, and the comments can get monotonous. Also, although it gets you up to speed on playing simple chords and songs, it never gets to some important intermediate concepts such as scales and modes.

To get a broader range of lessons, check out Red Door Interactive's **Guitar Shop Vol. 1** (♦♦♦½, \$39.98 list). This application starts off easy but continues to more-difficult concepts. That doesn't make it better than Guitar Method — in fact, its teaching method isn't as entertaining — but it does expose you to a greater variety of concepts through easy-to-understand lessons.

The interface is fairly bare compared to that of Guitar Method. The screens in each lesson have roughly the same look, containing some written text and a video clip that demonstrates a concept. Sometimes the video is choppy and can even be confusing, because you get to see only one hand.

If you think Guitar Shop's interface is dull, you ought to take a look at Leydon Software's **My Guitar Buddy** (♦♦, \$14.95 estimated street). Most screens show a drawing of a guitar neck (with dots that light up to show you fingering) and not

much else. The program would benefit greatly from some additional elements, such as video demonstrations.

The information it does impart doesn't scratch below the surface. For example, the finger exercises are helpful but too short. Playing along with its music (choppy in spots) also proved to be a chore, because the application doesn't give you any written music to follow.

On a Different Note

Another program aimed at beginners, but with a unique twist, is a hardware/software combo: Lyrrus' **Guitar 101** (♦♦♦½, \$49.95 estimated street) and **G-Vox Musician Plus** (♦♦♦, \$349.95 estimated street). Each is a stand-alone product, but they can be used together to get more interactivity than you get with the other programs.

The G-Vox is a pickup device that attaches to your guitar as well as to an interface box that connects to the Mac's serial port. It lets your Mac detect which notes you're playing on the guitar and then display those notes on a bar of music on-screen, so you can see if you're playing the right notes. Unfortunately, you get very few music samples with this expensive product, but you can purchase additional libraries.

The system works with nearly any electric or acoustic guitar, but the guitar must have steel strings (not the nylon strings of some classical guitars). The G-Vox is a bit finicky — I had a hard time

positioning it correctly to get a good response from the pickup.

The software part of this combo, **Guitar 101**, has an impressive interface that simulates the look and feel of a laid-back classroom (see screen shot). Its lessons focus on basic music theory and techniques, are full of useful pointers, and include exercises to help drive the lessons home. I was disappointed, though, that the sound in the exercises was not like that of a real guitar.

Off the Record

Maybe it's not the basics you want to learn. Suppose you just want to play some songs. Ubi Soft Entertainment's **Classic Rock Guitar Vol. 1** (♦♦♦♦, \$59.95 estimated street) is the answer. **Classic Rock** contains eight well-known songs, such as Jimi Hendrix's "Hey Joe," and is aimed at intermediate guitarists. A basic understanding of the guitar is probably necessary to make good use of this program.

It gives you a couple of ways to learn to play. You can play along with a full version of the original music, if you're comfortable following the tablature that scrolls along the bottom of the window, or you can focus on a particular passage and learn such details as the picking and strumming techniques specific to that passage. The latter method is particularly helpful, because you can focus on harder aspects of a song before moving on. This software also gives you numerous tips and video demonstrations.

Classic Rock Guitar Vol. 1

Ubi Soft Entertainment, San Francisco, CA
 800-824-7638 or 415-547-4000
www.ubisoft.com

Guitar 101 and G-Vox Musician Plus

Lyrrus, Philadelphia, PA
 800-789-4869 or 215-922-0880
www.lyrrus.com

Guitar Method

eMedia, Seattle, WA
 888-363-3424 or 206-329-5657
www.emedia.org

Guitar Shop Vol. 1

Red Door Interactive, St. Charles, MO
 800-949-2983 or 314-278-1644
www.reddoorint.com

My Guitar Buddy

Leydon Software, Philadelphia, PA
 215-848-7933

Ritchie Sambora Interactive Guitar

Enteractive, New York, NY
 800-433-4464 or 212-221-6559
www.enteractive.com

Its biggest flaw is that navigating through the program can be confusing, because it's not well organized.

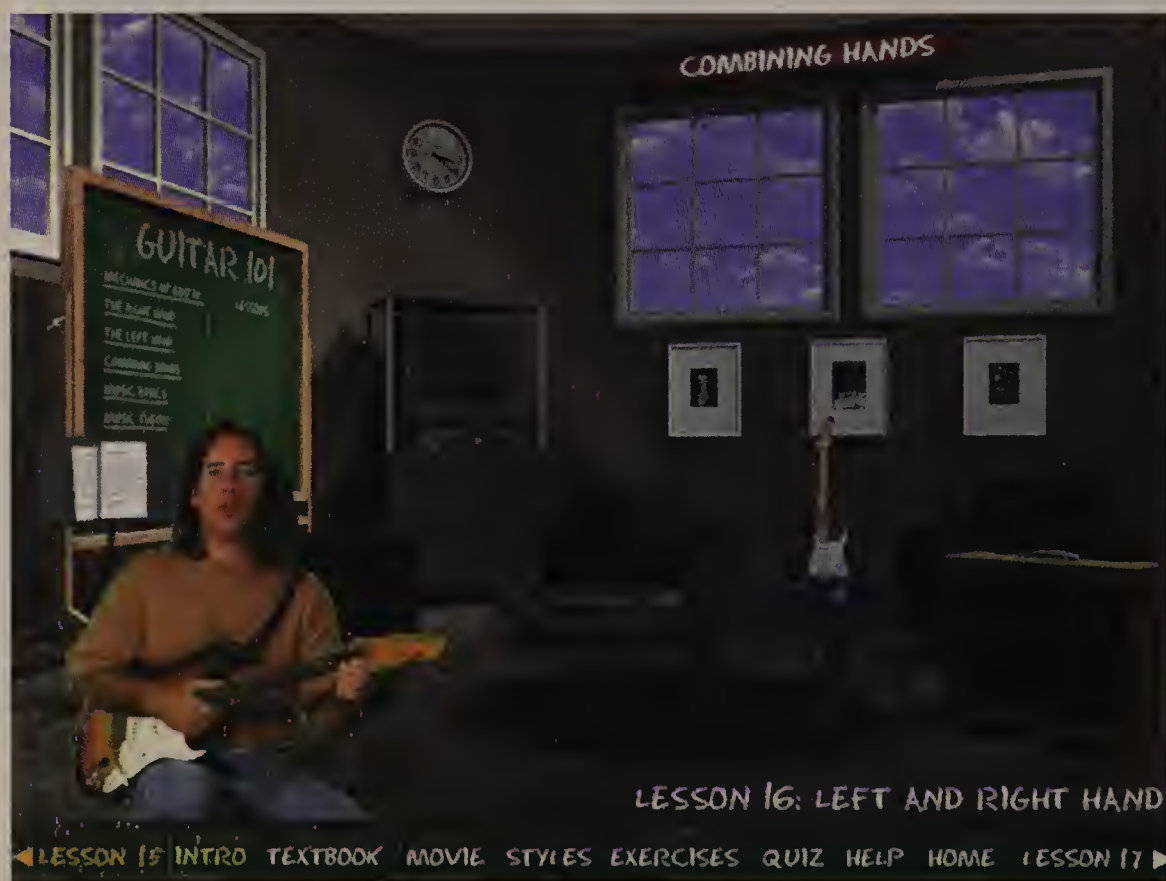
If you're a Bon Jovi fan, Enteractive's **Ritchie Sambora Interactive Guitar** (♦♦♦, \$29.95 estimated street) may be the perfect choice for you. Have you ever wondered how "Livin' On a Prayer" is played? This and nine other Bon Jovi hits are broken down to help you learn some of the techniques lead guitarist Ritchie Sambora used.

Sambora himself demonstrates a few fundamentals of playing the guitar. Besides getting some playing tips, you also learn about this famous guitarist — hear his opinion on past Bon Jovi records, view clips from music videos, and see Sambora playing some of his favorite axes. Not all the coverage is great — some interviews with him are thin, nothing more than a comment or two. Don't expect much emphasis on the guitar from this CD-ROM, which borders on Sambora worship.

Standing Ovation

With all these options available for learning, my friends will be strumming away in no time. Who knows, pretty soon they might be showing me some tricks. Wait, where'd that CD-ROM run off to? 🐼

.....
 Martin Wong, MacUser Labs' associate project leader, specializes in guitar jams and printer unjams.



SPSS® 6.1 for the Macintosh® Real Stats. Real Easy.

**Accelerated
for the Power
Mac!**

Use SPSS 6.1 for the Macintosh when you need in-depth answers quickly and easily. Go beyond summary statistics and spreadsheet row-and-column math by using the right tool for the job. SPSS is a complete tool kit of statistics, graphs and reports that enables you to answer tough questions like:

- Why did sales drop in the last quarter?
- How satisfied are my customers?
- What are the patterns in my data?

SPSS products are used today for:

Survey research

- Explore consumer awareness
- Compare perceptions of products
- Discover preferences by group

Marketing and sales analysis

- Analyze your customer database
- Forecast sales by product and region
- Improve mailing responses
- Determine which promotions work best

Quality improvement

- Assess process capability
- Reduce nonconformance
- Spot unnatural patterns of variation
- Track incidence of infection

Research of all types

- Test hypotheses
- Determine group differences
- Track performance over time
- Prepare professional reports

Answer your tough questions

From the most basic to the most in-depth analysis, SPSS 6.1 for the Macintosh gives you a wide range of statistics. Use procedures from counts and crosstabs to regression, factor, Kaplan-Meier plus over 60 more! SPSS gives you all the statistics you need to answer your tough questions.

All statistics are in organized, easy-to-use menus and dialog boxes. Get up and running quickly with the online tutorial. Task-oriented help and a statistical glossary guide novices and experts alike.

See your results clearly and pinpoint your answers easily with 50+ fully-integrated, high-resolution charts.

Take advantage of System 7 features such as Apple® Events, Balloon Help™ and AppleScript™ support.

Working with SPSS couldn't be easier. Call today to find out how to answer your tough questions every day with SPSS 6.1 for the Macintosh!

Get a great value – order now!

1 (800) 457-8287

Fax 1 (800) 841-0064

Our WWW site <http://www.spss.com>

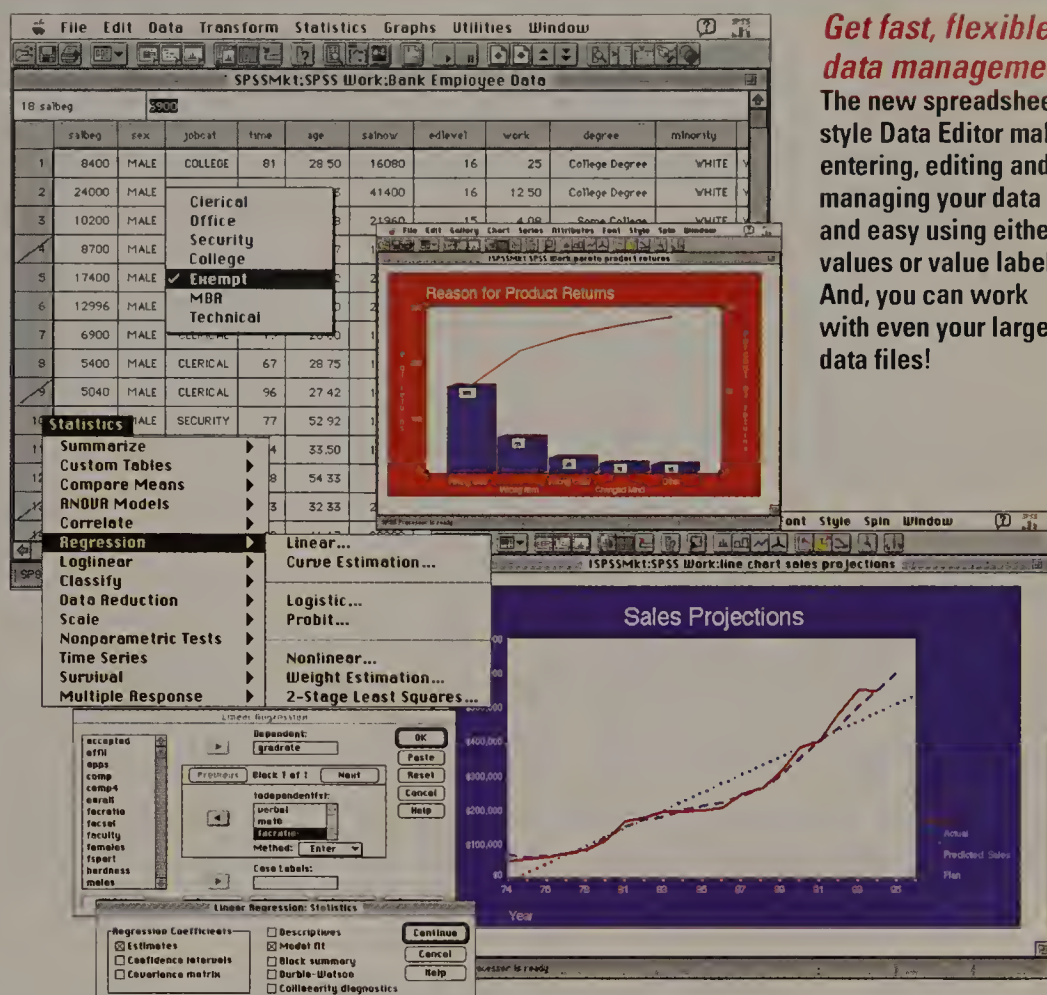
Circle 85 on reader service card

Get answers to tough questions using in-depth statistics!

Work with 60+ statistical procedures from basics such as counts and crosstabs to more sophisticated statistics including factor, regression and logistic regression.

Work faster with an all new Macintosh interface!

Learn faster using an online tutorial and speed up analysis with task-oriented help, a statistical glossary and a new toolbar. Plus, all statistics are located in organized, convenient menus and dialog boxes for fast access without having to type commands!



Get fast, flexible data management!

The new spreadsheet-style Data Editor makes entering, editing and managing your data fast and easy using either values or value labels. And, you can work with even your largest data files!

See your results quickly and clearly!

Use 50+ integrated, high-resolution charts and graphs. Choose from business, statistical and SQC charts. All charts can be fully edited with point-and-click accuracy through tear-off menus and palettes.

Take a closer look at SPSS 6.1 for the Macintosh:

- All new Macintosh interface
- 60+ statistical procedures – from the most basic to the most advanced
- Work with even your largest data files
- 50+ integrated, high-resolution business, statistical and quality charts with automatic labels, including: Bar, Area, Pie, High-Low-Close, Histograms, Scatterplots, Boxplots, Error bars, Pareto, X-bar, Range, Autocorrelation Plots and many more
- Create labeled charts automatically as part of SPSS' powerful statistical routines
- Choose the right chart with the SPSS' Chart Advisor
- Toolbar with one-button access to statistics, commonly used functions and results.

Plus, with the Dialog Box Recall button, SPSS remembers your last 12 steps making it fast and easy to do ad hoc or refine analyses

- Supports Apple® Events required suite
- Quickly build error-free production jobs from SPSS dialog boxes or type commands using our command language. Use AppleScript™ to run your production jobs unattended
- Hot buttons between graphs and numerical output
- New spreadsheet-style Data Editor makes it easy for you to enter, edit, browse and manage your data. Display values as labels or as numbers
- Option-click any variable cell to see a pop-up menu of value labels

- Save time by defining templates for variable definitions you use frequently
- Identify individual cases in scatterplots and boxplots and see related cases highlighted in the Data Editor
- ODBC database access
- Access files in other applications through Easy Open translators
- Complete report writer
- Online tutorial with step-by-step instructions and system overview
- Task-oriented help system
- Glossary of statistical terms
- Documentation that clearly explains statistics
- Technical support for statistical and operational help

- Explore data more thoroughly with factor, cluster, discriminant analysis and more with SPSS Professional Statistics™
- Execute advanced multivariate techniques such as Cox regression, Kaplan-Meier estimation, logistic regression and more with SPSS Advanced Statistics™
- Create customized tabular reports with SPSS Tables™
- Predict the future using advanced time-series analysis in SPSS Trends™
- Perform perceptual mapping, conjoint analysis and optimal scaling procedures with SPSS Categories®



Get a great value – order now!

Call 1 (800) 457-8287

Fax 1 (800) 841-0064

or mail to: SPSS Inc.
444 North Michigan Avenue
Chicago, IL 60611

American Express, Discover, MasterCard,
VISA and I.M.P.A.C. cards accepted

Name	_____
Title	_____
Organization	_____
Address	_____
City	_____
State	_____
ZIP	_____
E-mail	_____
Phone number ()	_____
Fax number ()	_____

Try SPSS 6.1 for the Macintosh with our unconditional, 60-day money-back guarantee.

(U.S. and Canada only)

A8287

SPSS
Real Stats. Real Easy.™

Chicago • Washington, D.C. • Boulogne • Chertsey • Gorinchem • Madrid • Munich • New Delhi • Singapore • Stockholm • Sydney • Tokyo • And distributors worldwide

Andy Ihnatko



By Andy Ihnatko

andyi@macuser.com

An Alan Smithee Computer

We're ready for our close-up, Mr. Jobs

OK, LOOK: I don't *care* about alliances with Microsoft. I don't *care* about Rhapsody coming in on schedule. I don't care about market share. I don't care about CHRP or licensing issues. And I don't care about who fills the vacant (at this writing) slot on Apple's board of directors. All I know is that I certainly won't be one of them. Steve Jobs is a man capable of many wonderful things, but letting go of a grudge isn't one of them. As my silent telephone effectively demonstrates, he hasn't forgotten that I spilled a whole can of Hawaiian Punch all over his Stray Cats T-shirt during the US Festival. It was an *accident*, Steve ... 15 years ago! Let it go!

And it's a damned shame, because I alone can see that the usual headline-grabbing issues are utterly meaningless in shaping the Mac's destiny. Really, I'm more concerned about bad product placement. Have you seen the sort of movies where Apple has won product placement?

Take *Independence Day*, for example. A massive armada of insectoid aliens encircles Earth and broadcasts a countdown

clock planetwide, unaware that this signal could be intercepted and exploited by the traditional enemy of all insectoid alien invaders, the local cable-television employee. Said employee then spends a lot of time in CodeWarrior writing a nifty little app so his PowerBook can track and dramatically display the time remaining until planetary holocaust, instead of actually *doing* anything about it. Later, the cable guy plugs this same PowerBook into the aliens' computer system and immediately causes the worst system crash in galactic history.

Sure ... I'm going to have a real easy time convincing my company's IS guy to let me put

my Power Mac on his Windows network after that. Worse than this obvious PR blunder is the embarrassing way Apple went and allowed a Mac to take part in one of the most evil clichés in modern cinema, the pointless Big Numerical Countdown to Destruction. What's next? During a high-speed downtown car chase, have Jackie Chan skid through a fruit cart loaded with 5300s?

Well, granted, they *are* already under a seven-year warranty extension, and they *would* be receiving a far more honorable death than all those Macintosh XLs Apple buried in Utah. And that's all I'm looking for in a Mac product placement really: a simple dose of dignity, just the tiniest endorsement of my bleak and pathetic lifestyle by a small team of grotesquely overpaid Hollywood phonies. But where to find any dignity in most of Apple's hits in the past couple of years?

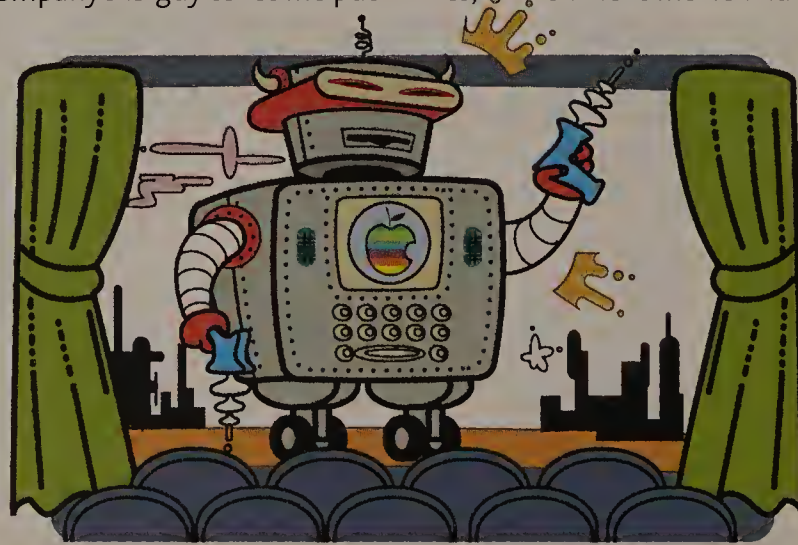
Perhaps the Mac's most prominent recent role was in *Mission Impossible*. This was more than a cameo appearance, actually — it was an enormous mass-media cross-promotion. If only this sort of deal was cut with an actual movie instead of with a two-hour exercise to see exactly how many components of a film's production Tom Cruise can stick his mitts into and mess up. Even *The Net* (which featured an entire Macworld Expo chase scene) falls short. Yes, it was a neat movie and it

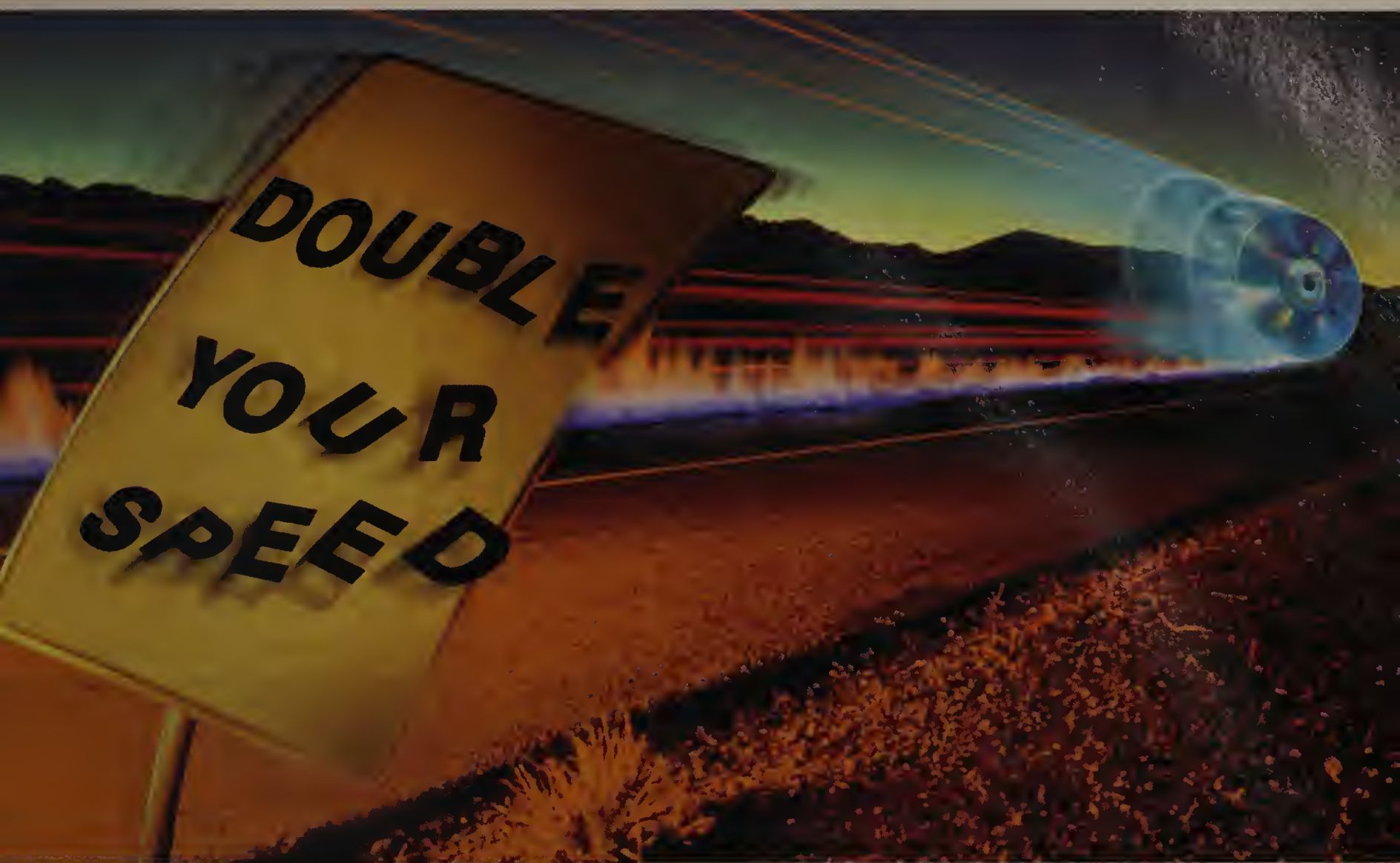
did well at the box office, but just who the hell noticed the Macs? An orange Boston terrier dressed like Elton John can't get noticed when it's sitting in the lap of a bathing-suited Sandra Bullock!

Granted, there have been one or two victories. Just last week, I saw *Fetishes*, a new documentary about underground bondage and S&M parlors in New York, and felt that familiar stirring sense of pride upon seeing that all the dominatrices used Macs. Obviously, there are some humiliating ritualistic inflictions of pain and abuse that are beyond the pale even for women who put out cigarettes on paying clients' tongues. And sure, it was cool to see Forrest Gump become one of the marks (investors ... *investors*) in Apple's initial public offering.

But these sorts of films are few and far between. No, ironically, when it comes to securing only the best-possible product placement for our platform of choice, we're going to have to let Forrest Gump show us the way. Hollywood, against all odds, makes as many as seven decent movies each and every year. We have the technology to simply add whatever Mac hardware is in style, *after* the movie has proven to have set its hooks into the hearts of America. Imagine! We talk to the Coen Brothers, and for a pair of Twentieth Anniversary Macs, suddenly in the scene in *Fargo* in which loser car salesman Jerry Lundegaard is being interrogated by Chief Marge, he lies that he can't account for the stolen Ciera because his computer crashed and Marge advises, "Oh, yah? Why dontcha let me just fire up that diskette on my PowerBook here? My Mac can mount anything, you betcha!"

Steve, again, I'm sorry about the T-shirt. But for the sake of the company ... *call me*. ☹



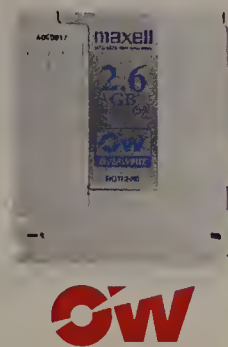


Using breakthrough LIMDOW® technology, Maxell brings you super-fast direct OverWrite Magneto Optical Disks.

LIMDOW (Light Intensity Modulation Direct OverWrite) technology boosts writing speeds by up to 100% over current Magneto Optical (MO) disks. That's because it requires only a single pass to rewrite new data to a disk—eliminating the need for erasing.

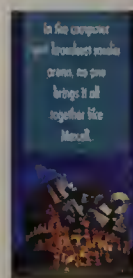
Now you can transfer data at an impressive 4.0 MB/second, and still have the security and convenience of a removable media with random access. Maxell's line of direct OverWrite MO disks are ideal for data storage, document imaging, file management, and multimedia applications.

On top of doubling your speed, Maxell's LIMDOW disks offer you the highest capacities available—640 MB on a 3.5-inch disk and 2.6 GB on a 5.25-inch disk. Plus, they'll be there for you down the road with durability rated at 1,000,000 rewrite cycles and an archival life of over 30 years! Look for LIMDOW capable drives from Nikon, Fujitsu, Hitachi, Pinnacle Micro, Most, Mitsubishi Chemical, Konica, and others.



Check out Maxell's entire line of data storage solutions. Whether you use floppies, cartridges, cassettes, CDs, optical disks or laser servo disks, you can count on Maxell's quality. Plus, Maxell products are backed by a lifetime warranty.

Put the "pedal to the metal" with the blazing rewrite speeds of Maxell's direct OverWrite MO disks. Got questions? Call our tech support center, or get our FREE product brochure by calling 1-888-2-Maxell (262-9355). Check out our Website at www.maxell.com



 **maxell**
Commercial Products Group
Technology for the next generation.

Maxell Corp. of America, 22-08 Route 208, Fair Lawn, New Jersey 07410
Maxell Canada, 111 Staffern Drive, Concord, Ontario, Canada L4K 2R2 • (905) 669-8107

Circle 22 on reader service card

You depend on the Macintosh to get work done faster, to stay connected with colleagues and friends, and turn your best ideas into action. This is why MACWORLD Expo San Francisco is the event that brings you the world of the Mac.

Macworld EXPO

san francisco

Moscone Convention Center • MACWORLD Expo Conference: January 6-9, 1998



Only at MACWORLD Expo can you see and try thousands of products first-hand... learn from Macintosh experts through conferences and keynotes... talk with other Macintosh users and vendors... and stay on top of new developments that could impact your buying decisions. You'll gain valuable insights into how innovative companies are unleashing the power of the Macintosh OS.

step into the future

Come evaluate cost-saving solutions for:

- Publishing, entertainment, and multimedia
- Web site design and Internet navigation
- Networking, intranets, and enterprise-wide connectivity
- Education, R&D, and research
- Business and telecommuting

If the Macintosh is part of your business, MACWORLD Expo is your lifeline.

www.macworldexpo.com or 800.645.EXPO

NEW!

Macworld/Pro Conference

January 5-7, 1998

Go inside the hottest issues facing Macintosh professionals in our new technical conference. Gain in-depth information on Macintosh Web development, content creation, site management, Internet/intranet deployment and networking issues.

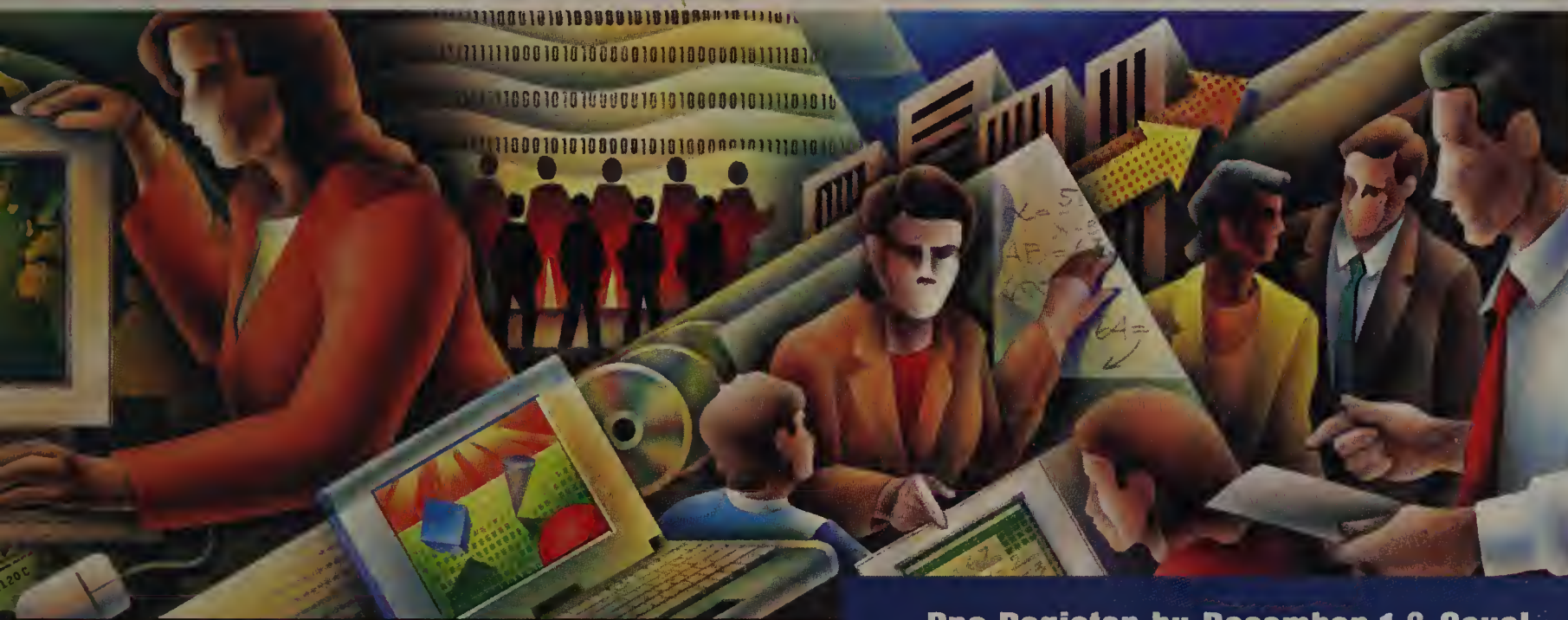
At Macworld/Pro, you can enhance your skills in our full day workshops, get your toughest problems solved in over 30 challenging conference sessions, hang out with fellow Macintosh

professionals in our birds-of-a-feather gatherings, and go face to face with developers of the leading Macintosh Web development, Internet and networking tools at the special conference vendor fair.

If you're a manager of a large Mac installation or a professional Web/Internet/intranet technologist who uses Mac OS and Rhapsody-based tools, this is the advanced education you've been waiting for.

Get the most out of your MACWORLD Expo experience at Macworld/Pro!

Macworld/Pro Conference: January 5-7, 1998 • Exhibits: January 6-9, 1998



of the Macintosh

MACWORLD Expo/San Francisco is the industry's premier Macintosh event, and the scheduled 1998 release of Apple's Rhapsody OS may make this year's event the most important ever. Share the excitement and buzz with more than 70,000 other users who are running their companies on the Macintosh platform.

Sponsored by:

Macworld
MacWEEK

Owned & Produced by:

IDG
EXPO MANAGEMENT
COMPANY

Pre-Register by December 1 & Save!

SAVE \$100 on Package 1:

Full Package (All Macworld/Pro and MACWORLD Expo Events)

SAVE \$100 on Package 2:

All Macworld/Pro Events

SAVE \$100 on Package 3:

Macworld/Pro Conference

SAVE \$50 on Package 4:

Macworld/Pro Full-Day Workshops

SAVE \$25 on Package 5:

MACWORLD Expo Conference

SAVE \$15 on Package 6:

MACWORLD Expo Exhibits Only

Please refer to the Registration Page for package descriptions.



Macworld
EXPO

san francisco

featuring:

Supercharged Keynotes

MACWORLD Expo keynote sessions feature industry innovators and are often full of surprises. Gain new insights into the future world of Macintosh... see the hottest and coolest new products... and get the inside view of the Macintosh platform.

A host of outstanding keynote sessions will take place on January 6. Keynotes are open to all conference attendees and are on a first-come, first-served basis, so register today!

Tuesday, January 6 • San Francisco Marriott Hotel

Special Features

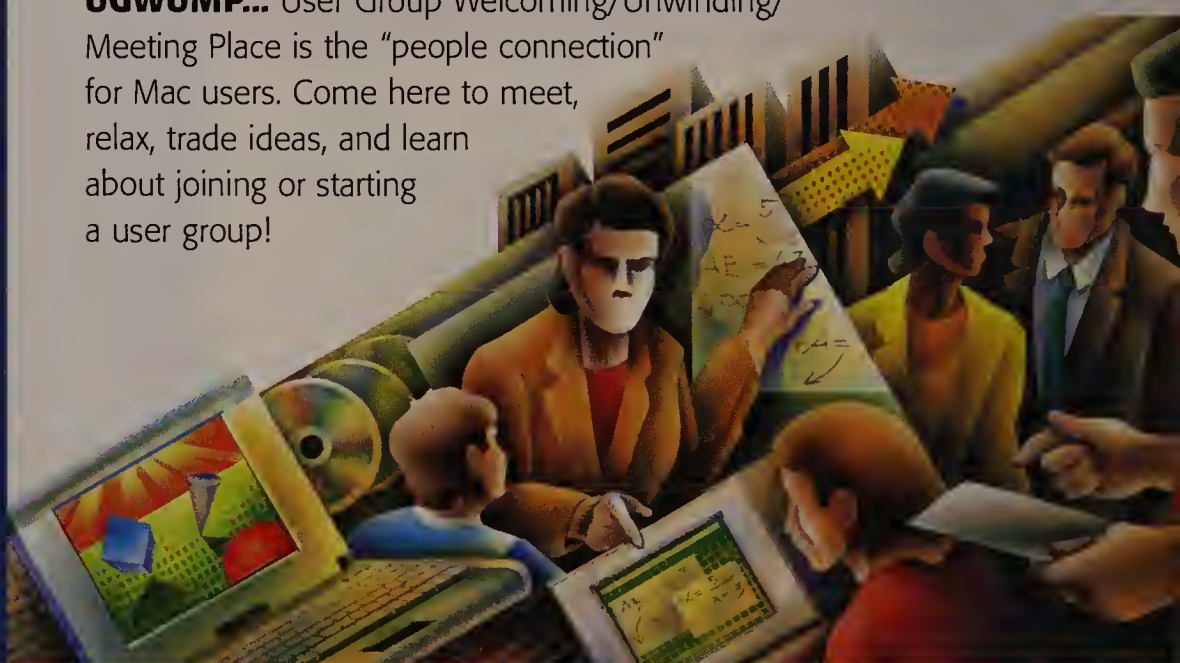
You asked for it and now you've got it. Special exhibit sections devoted to the most popular product areas.

- **Business Solutions Pavilion...**
focused on the growing market for Mac business applications.
- **Education Pavilion...**
featuring software, Internet tools and multi-media for schools and home learning.
- **MACWORLD Expo Greenhouse...**
the hottest products for innovative developers.

Special Interests

Developer Central... expand your business and learn new insights at Developer Central, where software developers can find the tools and solutions they need to grow their companies and reduce development time and costs. Seminars taught by the world's leading Mac experts add value to the product selection.

UGWUMP... User Group Welcoming/Unwinding/Meeting Place is the "people connection" for Mac users. Come here to meet, relax, trade ideas, and learn about joining or starting a user group!



NEW! Macworld/Pro Conference

The Macintosh Professionals Conference

January 5-7

- 10 Full-Day Workshops
- 30 Conference Sessions
- Special Keynotes and Evening Sessions
- Web/Internet/Intranet/Networking Vendor Fair

Preliminary Sessions Include*:

- Macworld/Pro Vendor Fair
- Planning a Rhapsody Migration
- Tuning Open Transport
- Interactive Websites with Dynamic HTML
- Rhapsody Servers
- Optimizing AppleShare IP
- Defending against Common Internet Attacks
- Managing really large Mac-based web sites
- AppleTalk Services in an IP World
- ISDN and xDSL Solutions for Mac Environments
- Windows NT for Mac Managers
- Managing eMail with IMAP
- Web Graphics for the Creatively Challenged
- Networking in a Rhapsody World
- Java Virtual Machines for the Mac
- Putting WebObjects to Work

**Session listing subject to change.*

Access the web at: www.macworldexpo.com/macworldpro/ to see the complete agenda and to get the very latest information on this exciting new conference program!

For a complete exhibitor list and more information,

Call 800-645-EXPO or see www.macworldexpo.com

Macworld EXPO conference

January 6-9, 1998

Create your own solutions-oriented agenda from THIRTEEN conference tracks, each brimming with content. Here's just a sampling of topics on the agenda:

A. The Macworld Magazine Track

Macworld's editors, columnists, and featured guests present living pages of the magazine's hottest topics, including:

- Macworld Magazine's Best of Show • The Best of Macworld's MacSecrets • Become Your Own Troubleshooting Guru • The Best of Macworld's HTML and Web Publishing Secrets

B. The Design/Art/Publishing Track

Top graphics arts professionals share their expertise and experience — plus their best tips to provide you with an insight into the future of breakthrough technologies. Topics include:

- Bringing Concepts to Life through Imaging • Color Correction in Photoshop • Digital Photography • Advanced Imaging for Professionals • From the Screen to the Printed Page • Vectors and/or Pixels • Digital Wizardry

C. NEW! The Web Technical (Tools) Track

Nuts-and-bolts mechanical details on the best tools available to create and maintain a Web Site that is profitable, productive, and fun — and tips from the pros on how to get the most out of the tools you select. Topics include:

- Optimizing Your Web Server • Choosing and Using Tools for the Coolest Web Site • Web Databases and Catalogs • Tools for Web Page Designers • Web Site Asset Management

D. NEW! The Web Creative (Techniques) Track

The Macintosh is the premiere vehicle for the creation of content on the Web. Get a leg up on the Web (and your competition) with sessions designed to help you populate the 'net — with panache! Topics include:

- Web Graphics Mentors • Create Your Own Home Page • Web Page Navigation and Content Structure • Building Interactivity into Your Web Site • Webcasting • QuickTime VR on the Web • How NOT To Design Your Web Page! • The Good, The Bad, The Ugly on the Web • Video on the Web

E. NEW! The Web Business (Making Money) Track

You have the functionally-perfect Web Site, with graphics that are not only dazzling but outstandingly practical. Now get the inside story on how to make it all pay off for you, in sessions that show how to maximize your Web investment. Topics include:

- Electronic Commerce on a Mac Web Site • Business Models That Work on the Web • Security and Cryptography for the Web • Using the Web as a Marketing Tool • Getting Advertisers for Your Web Site

F. The Creating Entertainment Track

The ever-increasing power of the Mac offers unparalleled opportunity for creating entertainment and other compelling content. In sessions designed specifically for digital content creators, designers, video producers, filmmakers, and multimedia professionals, you can learn from the pros and have fun while you're doing it! Topics include:

- Getting Started with Digital Video and Editing • Animation Techniques, Tips, and Tricks • Creating Special Effects, Hollywood Style! • Designing Rich Content in a Low-Bandwidth World • DVD Insights

G. The Operating System/Connectivity Track

The unique power of the Macintosh lives in its Operating System and Extensions. Learn how to harness that power, extend and protect it with third-party additions, manage your computer for better productivity, and build fast, easy-to-use networks for printing and sharing files and using the Internet. Topics include:

- Essential Network Management Tools in a Cross-Platform World • Justifying Macs in a PC Environment • Virus Protection, Security, and Privacy • Running Macs with NT Servers • System Folder Explained • Supporting High-Speed and High-Utilization Networks • Running Macs with Novell • Mobile Computing on Macs: New Tips for Road Warriors!

H. The Small Office/Home Office (SOHO) Track

Never before has it been easier — or more fun! — to launch and operate a small company, a home-based business, or a home office for telecommuting. Hear experts share their insights on how YOU can increase productivity and slash costs! Topics include:

- Putting Your Small Business on the Web • The Joy of Working at Home • Getting the Most from the 'Net for Your Small Business • Working Solo: Success Secrets • Using the Latest and Greatest to Run Your Small Business

I. The Educator Track

An excellent opportunity for educators, administrators, and students to show and be shown new and classic examples of how the Macintosh positively shines as a teaching tool. Topics include:

- Maintaining Sanity and Productivity within Your Computer Lab • Teaching How to Use the Web Safely • Solving Your Classroom Computer Nightmares • Building a Curriculum-Based Intranet • Cool Computer Curriculum Projects! • How to Build a Classroom Using eMate

J. BACK BY POPULAR DEMAND: The Programmer/Developer Track

For in-house developers, veteran independents, and novice Mac techies alike: the hottest breakthroughs and innovations, plus solid advice from eminently reliable sources. Topics include:

- Rhapsody Tips for Developers • Adventures in AppleScript • LET'S MAKE A DEAL! (Financing How-To's for Developers) • How to Become a Macintosh Programmer • Beginner Java • Beyond Beginner Java • Java Beans • Developing with WebObjects

K. The Tools Workshops

Intensive training sessions on some of the most popular Macintosh tools, presented in a totally non-biased format by the award-winning staff of MacAcademy.

- Mastering the Macintosh: Intermediate to Advanced • Claris Works • Adobe PageMill • Adobe Photoshop • QuarkXPress • Macromedia Director

L. The Special Interest Group Track

Sessions for "birds of a feather" looking to compare Mac notes with others in a similar setting — to solve special problems, to see how colleagues across the continent are getting more mileage out of the Mac, and to develop an invaluable "user network."

- Macs in the Law Office • Macs in Science and Technology • The MACWORLD Expo User Group Extravaganza (MUSE)

M. The You-Asked-For-It Track

A combination of perennial MACWORLD Expo favorites, plus brand-new topics in response to your special requests, with up-to-the-minute market developments. For starters:

- Mac Tune-up Clinic • Getting Started with WebObjects • Getting Started with HTML

It's the best bargain in the Macintosh world. If you pre-register, for only \$170 you can attend 3 days of conference sessions in any of 13 conference tracks! Whether your world is corporate America, SOHO, schools, home or the road, you'll learn new ways to improve your productivity, cut costs and increase your Mac's potential. The most accomplished users and knowledgeable insiders answer your questions and show you how to push your Mac to a higher level of power and performance.

For more information:
Call 800-645-EXPO



ATTENDING

made easy

MACWORLD Expo/San Francisco Moscone Convention Center

Macworld EXPO

Macworld/Pro Conference

January 5-7, 1998

MACWORLD Expo Conference Hours

January 6: 11:30 a.m. – 5:15 p.m.

January 7-8: 11:30 a.m. – 5:15 p.m.

January 9: 11:30 a.m. – 2:15 p.m.

Exhibit Hours

January 6-8: 10:00 a.m. – 6:00 p.m.

January 9: 10:00 a.m. – 4:00 p.m.

Keynotes (Conference attendees only)

Yerba Buena Ballroom

San Francisco Marriott

January 6: 12:00 p.m. – 4:15 p.m.

Registration Hours

January 4, 12:00 p.m. – 5:00 p.m.

January 5, 8:00 a.m. – 3:00 p.m.

January 6-8, 8:00 a.m. – 6:00 p.m.

January 9, 8:00 a.m. – 4:00 p.m.

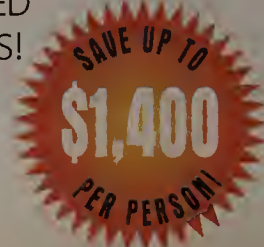


Event Travel Services (ETS) is the official travel agency for MACWORLD Expo. Simply call 800-361-8191, (617) 361-8111 outside the U.S., 9:00 a.m. – 7:00 p.m. EST or fax ETS at (617) 361-6936 to make all your travel and accommodation reservations. Or visit our Web site at: www.macworldexpo.com.

Hotel availability is limited and on a first-come, first-served basis. A credit card is required to make any hotel, air, or car reservation. Additionally, a non-refundable two night deposit plus 14% California state and local taxes will be billed to your credit card at time of booking. Air tickets are to be paid in full at time of booking.

ETS is proud to offer exclusive, low midweek fares on United Airlines and American Airlines into San Francisco from your home city. **NO SATURDAY STAY IS REQUIRED TO TAKE ADVANTAGE OF THESE LOW FARES!**

We also offer exclusive car rental rates starting as low as \$30 per day with National, Alamo and Avis.



Cancellation Policy: Airline/Hotel/Car Rental

All changes or cancellations must be made through Event Travel Services. Airline, hotel, and car rental policies vary by company. You will be advised of policies and penalties at time of booking. Rates and availability are subject to change without notice.

Responsibility and Liability: Event Travel Services, travel program producer, and MHA Event Management, travel program sponsor, and/or their agents act only in the capacity of agents for customer in all matters pertaining to hotel accommodations and transportation whether railroad, motor car, airplane or any other means, and as such are not responsible for any damage, expense or change in schedule or condition from any loss, injury or damage to any person or property from any cause whatsoever. Baggage handling throughout the program is entirely at the owner's risk. The customer agrees that MHA Event Management/Event Travel Services shall not be held responsible in the event of any errors or omissions in any promotional material.

U.S. and Canadian Attendees:

Badges will be mailed after December 22, 1997.

International Attendees:

International Badges (excluding Canada) will be held on-site at the Pre-Registered Attendee Counter in the North Lobby of the Moscone Convention Center.

Services for the Physically Challenged

We're committed to ensuring that our physically challenged attendees receive all the services they need to make their visit productive. Call us at 800-645-3976 for more details on the services we offer.

www.macworldexpo.com

Hotel	Single/Double
ANA Hotel 50 Third Street, San Francisco, CA 94103	\$184/204
Best Western Americana 121 Seventh St., San Francisco, CA 94103	\$80/90
Best Western Cantebury 750 Sutter Street, San Francisco, CA 94109	\$99/109
Carriage Inn 140 Seventh Street, San Francisco, CA 94103	\$95/110
The Chancellor 433 Powell St. on Union Square San Francisco, CA 94102	\$115/115
The Donatello 501 Post Street, San Francisco, CA 94102	\$144/144
Fairmont Hotel 950 Mason Street, San Francisco, CA 94108	\$139/139
Grand Hyatt San Francisco 345 Stockton Street, San Francisco, CA 94108	\$165/185
The Handlery Union Square 351 Geary Street, San Francisco, CA 94102	\$115/135
Hotel Britton 112 Seventh Street, San Francisco, CA 94103	\$65/75
Hotel Milano 55 Fifth Street, San Francisco, CA 94103	\$135/135
Hotel Nikko 222 Mason Street, San Francisco, CA 94102	\$149/149
Hyatt Regency San Francisco 5 Embarcadero Center, San Francisco, CA 94111	\$156/176
King George Hotel 344 Mason Street, San Francisco, CA 94102	\$119/129
Mark Hopkins Intercontinental Number One Nob Hill, San Francisco, CA 94108	\$145/145
Parc Fifty Five 55 Cyril Magnin Street, San Francisco, CA 94102	\$159/159
Ramada Plaza Hotel at Fisherman's Wharf 590 Bay Street, San Francisco, CA 94133	\$111/116
Renaissance Stanford Court Hotel 905 California Street, San Francisco, CA 94108	\$152/162
San Francisco Marriott 55 Fourth Street, San Francisco, CA 94103	\$186/206
Shannon Court 550 Geary Street, San Francisco, CA 94102	\$109/109
Sheraton Palace Hotel 2 New Montgomery St., San Francisco, CA 94105	\$185/215
Sir Francis Drake 450 Powell Street, San Francisco, CA 94102	\$139/149
West Coast Pickwick Hotel 85 Fifth Street, San Francisco, CA 94103	\$129/129
The Westin St. Francis 335 Powell Street, San Francisco, CA 94102	\$169/184
<i>Exclusive rates available through ETS only.</i>	

MACWORLD EXPO/SAN FRANCISCO REGISTRATION FORM

MACWORLD Expo/San Francisco • January 5-9, 1998 • Moscone Convention Center

1. REGISTRATION SELECTION AND FEES (SELECT ONE)

PRE-REGISTRATION DEADLINE IS DECEMBER 1!

Please choose your package and fill out the form completely. Incomplete forms will be returned. Please use one form per person; make photocopies for additional people.

All Conference and Keynote Sessions are on a first-come, first-served basis, with the exception of the Macworld/Pro Full-Day Workshops.

☐ Package 1* - Full Package (Jan. 5-9)

Includes Macworld/Pro Full-Day Workshops, Macworld/Pro Conference Sessions, Lunch (Mon.-Wed.), ALL Keynotes, MACWORLD Expo Conference Sessions, and Exhibits.

☐ Package 2* - Macworld/Pro Full-Day Workshops and Conference (Jan. 5-7)

Includes Macworld/Pro Full-Day Workshops, Macworld/Pro Conference Sessions, Lunch (Mon.-Wed.), ALL Keynotes, and Exhibits

☐ Package 3 - Macworld/Pro Conference (Jan. 6-7)

Includes Macworld/Pro Conference Sessions, Lunch (Tues.-Wed. only) ALL Keynotes, and Exhibits.

☐ Package 4* - Macworld/Pro Full-Day Workshops (Jan. 5)

Includes Macworld/Pro Full-Day Workshops, Lunch (Mon. only) ALL Keynotes, and Exhibits.

☐ Package 5 - MACWORLD Expo Conference (Jan. 6-9)

Includes MACWORLD Expo Conference Sessions, ALL Keynotes, and Exhibits.

☐ Package 6 - Exhibits Only (Jan. 6-9)

Includes admission to the exhibits only.

* For Packages 1, 2 & 4, a Macworld representative will contact you for your Workshop selection

Advance
Registration
(before 12/1)
\$895

On-Site
Registration
(after 12/1)
\$995

\$795

\$895

\$595

\$695

\$295

\$345

\$170

\$195

\$25

\$40

• Confirmation of your registration will be sent to you once your registration is processed. Pre-registration deadline is December 1, 1997.

• U.S. & Canadian Badges: will be mailed after December 22.

• International Badges: (excluding Canada) will be held on-site at the Pre-Registered Attendee Counter in the North Lobby of the Moscone Convention Center.

• Registration Hours: January 4, 12:00 p.m. - 5:00 p.m.; January 6-8, 8:00 a.m. - 6:00 p.m. and January 9, 8:00 a.m. - 4:00 p.m.

☐ Please check here if you are disabled and require special services. Simply attach a written description of your needs.

2. CUSTOMER INFORMATION

First Name M.I. Last Name

Title

Company

Street Address (please include apt. #, suite, mail stop, etc.)

P.O. Box (if applicable)

City State/Province Zip Code/Postal Code

Country Telephone Extension

Fax Internet/Email Address

Conditions and Policies:

Payment must accompany form for registration to be complete. Purchase orders not accepted. Registration forms received after Dec. 1 will be returned unprocessed. After this date you must register on-site. This form cannot be used for on-site registration. All registration fees are non-refundable and credentials are non-transferable. A \$20 fee will be charged for all returned checks.

3. ATTENDEE PROFILE

MUST BE FILLED OUT TO PROCESS YOUR BADGE.

WHAT IS YOUR INDUSTRY? (Check One Only)

- ☐ 1. Accounting/Finance
- ☐ 2. Aerospace
- ☐ 3. Architecture/Construction/Process Industries
- ☐ 4. Art/Design/Creative Services
- ☐ 5. Arts & Entertainment
- ☐ 6. Computer Reseller/VAR/NAO/Service
- ☐ 7. Consulting
- ☐ 8. Education
- ☐ 9. Engineering/R&D
- ☐ 10. Government/Military
- ☐ 11. Health/Medical Services
- ☐ 12. Legal Services
- ☐ 13. Manufacturing (Computer Industry)
- ☐ 14. Manufacturing (Non-Computer Industry)
- ☐ 15. Marketing/Sales/PR/Communications
- ☐ 16. Printing/Publishing
- ☐ 17. Transportation
- ☐ 18. Utilities
- ☐ 19. Other

WHAT IS YOUR JOB FUNCTION? (Check One Only)

- ☐ 20. Art Director/Graphics

- ☐ 21. Consultant
- ☐ 22. Controller/Treasurer/Accounting/CFO
- ☐ 23. Corporate Executive
- ☐ 24. DP/IS Management/CIO
- ☐ 25. Editorial/Writing
- ☐ 26. Educator
- ☐ 27. Engineering/Scientific/R&D
- ☐ 28. Human Resources
- ☐ 29. Management/Department Head
- ☐ 30. Marketing/Sales
- ☐ 31. Network Management
- ☐ 32. Professional (Lawyer, Doctor, etc.)
- ☐ 33. Programming/Analysis
- ☐ 34. Purchasing
- ☐ 35. Software Developer
- ☐ 36. Training
- ☐ 37. Other

WHAT IS THE SIZE OF YOUR ORGANIZATION?

- ☐ 38. Under 50
- ☐ 39. 50-99
- ☐ 40. 100-499
- ☐ 41. 500-999
- ☐ 42. 1000 & Over

WHICH PERSONAL COMPUTERS DO YOU USE? (Check all that apply)

- ☐ 43. Macintosh Powerbook Series/Duo Series
- ☐ 44. Macintosh II Series
- ☐ 45. Macintosh Performa Series
- ☐ 46. Macintosh Centris Series
- ☐ 47. Macintosh Quadra Series
- ☐ 48. Macintosh Workgroup Series
- ☐ 49. PowerMac
- ☐ 50. Newton
- ☐ 51. Mac clone
- ☐ 52. IBM PC or compatible desktop
- ☐ 53. IBM Laptop/Notebook
- ☐ 54. Other

HOW MANY MACINTOSH COMPUTERS ARE USED IN YOUR ORGANIZATION?

- ☐ 55. 0
- ☐ 56. 1-10
- ☐ 57. 11-25
- ☐ 58. 26-50
- ☐ 59. 51-100
- ☐ 60. 101-500
- ☐ 61. 501+

ARE THE COMPUTERS AT YOUR ORGANIZATION NETWORKED?

- ☐ 62. Yes
- ☐ 63. No

WHICH APPLICATIONS DO YOU OR YOUR ORGANIZATION UTILIZE? (Check all that apply)

- ☐ 64. Accounting/Finance
- ☐ 65. Agenda/Minder/Scheduler
- ☐ 66. CAD/CAM
- ☐ 67. CASE Tools
- ☐ 68. Database
- ☐ 69. Desktop Publishing
- ☐ 70. Digital Video
- ☐ 71. Education
- ☐ 72. Graphics
- ☐ 73. Multimedia
- ☐ 74. Project Management
- ☐ 75. Spreadsheet
- ☐ 76. Word Processing

WHICH (IF ANY) OF THESE SERVICES DOES YOUR ORGANIZATION UTILIZE? (Check all that apply)

- ☐ 77. America On-line
- ☐ 78. AT&T
- ☐ 79. CompuServe
- ☐ 80. Prodigy
- ☐ 81. Other

MWAB

4. PAYMENT METHOD (YOU'LL BE CHARGED FOR ALL REGISTRATIONS RECEIVED INCLUDING DUPLICATES.)

☐ Check enclosed (make payable to MACWORLD Expo). Enclose check and form in an envelope.

☐ Master Card

☐ Visa

☐ American Express

Amount \$

Account Number

Expiration Date

If card holder is other than registrant, please print card holder's name below:

First Name M.I.

Last Name Card Holder Signature

Payment must accompany form for registration to be complete.

Important: Don't pay twice for this event! You will be charged for all registrations received, and not refunded for duplicate registrations. Please do not fax this form in more than once and if you fax, please do not mail in as well.

REGISTER NOW!

Use either ONE of the following methods to register with this form:

Fax to: 781.440.0359.

Faxed registration forms must include credit card information.

Mail to: MACWORLD Expo/San Francisco
P.O. Box 9103, Norwood, MA 02062-9103.

OR FOR MORE INFORMATION:

Visit the MACWORLD Expo Web site at
www.macworldexpo.com

For more information, call: 800.645.EXPO
or 781.551.9800 outside of the U.S.



(TTY) Service is available for the hearing impaired. Dial 781.440.0366.



PROFESSIONAL INC.

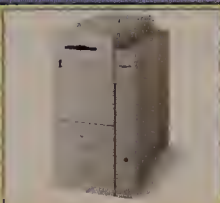
**800 BIG-4-MAC
244-4-622**

TEL: (818) 719-9200 • FAX: (818) 719-9115

SCHOOL, U.S. GOV'T, CORPORATE PO'S WELCOME • www.macprofessional.com

6430 VAREL AVE. #105, WOODLAND HILLS, CA 91367

POWER MACS



7300/180	16/2000-CD	CALL
7300/200	32/2000-CD	2099
8600/200	32/2000-CD-ZIP	2699
9600/233	32/4000-CD	3099
9600/200 MP	32/4000-CD	3499
6500/225	32/3000-CD	1599
6500/250	32/4000-CD	1799
6500/250	48/4000-CD-ZIP	2099
6500/275	32/4000-CD	2495
6500/300	64/4 GB-CD-ZIP	2495
7300/180 DOS	32/16/2GB/CD	CALL
8600 / 300	32/4GB-CD/ZIP	3499
9600/300	64/4GB/CD-	CALL
9600/350	64/4GB/CD-ZIP	5095

**FREE
SCANNER
W / EVERY
UMAX C600
CALL FOR
PRICING**

UMAX COMPUTERS

PRICE WAR!

S 900/250 MP	64/4 GB ULTRA SCSI RAID IMS 8 MB -CD ZIP	\$6250
S 900/200 DP	32/2.1 GB - CD KEYBOARD	2950
S 900/250	32/2.1 GB - CD IMS 8 MB	3095
S900/233	32/2.1 GB - CD IMS 8 MB	2695
S 900/200	32/2.1 GB - CD IMS 4 MB	2275
J 700/180	24/2.1 GB - CD IMS 2 MB / MODEM	1699



FREE CARRYING CASE W/PURCHASE

POWERBOOKS



1400 CS 133 MHZ	16 / 1.3GB - CD	CALL
1400 C 1166 MHZ	16 / 2000 - CD	2677
DUO 2400 C	NEW	CALL
3400 C/180	16/1.3-CD	3480
3400 C/200	16/200-CD	3725
3400 C/240	16/3000-CD	4795

**NEW
SPECIAL**

SCANNERS



AGFA STUDIO STAR LE	\$697
AGFA STUDIO STAR FULL	897
AGFA ARCUS II	1495
AGFA DUOSCAN	4159
UMAX POWER LOOK 2000	2999
UMAX ASTRA1200PHOTOSHOPFULL	549
UMAX POWERLOOK II 36 BIT	1299
UMAX MIRAGE II ADVANCE	6450
UMAX MIRAGE II MASTER	7250
LINOTYPE HELL JADE	479
LINOTYPE HELL SAPPHIRE	1795
LINOTYPE HELL SAPPHIRE ULTRA	3588
LINOTYPE HELL OPAL ULTRA11X17	7455
EPSON 636 EXEC	697
EPSON 636 ARTIST	839
EPSON 636 PROFESSIONAL	1279
POLAROID SPRINTSCAN 35/LE	737
POLAROID SPRINTSCAN 35/ES	1395
POLAROID SPRINTSCAN 35 PLUS	1659
POLAROID SPRINTSCAN 45	8195

DIGITAL VIDEO EDITING SYSTEM

INCLUDES: 16 GIG DISK ARRAY / 17" MONITOR / AFTER EFFECT		
POWER MAC 8600/250	96/4000-CD/MEDIA 100 QX/ADOBE PREMIER	\$9950
POWER MAC 8600/250	96/4000-CD/MEDIA 100 QXC/PREMIER	\$11850
POWER MAC 8600/250	96/4000-CD/MEDIA 100 LE	\$12950
POWER MAC 8600/250	96/4000-CD/MEDIA 100 LX	\$16950
POWER MAC 8600/250	96/4000-CD/TARGA 2000 PRO PREMIER	\$11750

TARGA 1000	\$ 1495
TARGA 2000	2850
TARGA 2000 PRO	3250

DAYSTAR / NEWER / XLR8
180 / 200 / 233 / 250 / 200MP
PROCESSOR CARD
CALL

**EXCELLENT
LEASING TERMS**

**WE SPECIALIZE
IN CUSTOM
MADE
CONFIGURATIONS**

**BEST PRICE
AVAILABILITY
CALL 4 LATEST**

PRINTERS



APPLE NEW PRINTERS	\$CALL
CLR STYLEWRITER 1200/2200	169/299
LASERWRITER 4/600	795
LASERWRITER 12/640	1495
LASER 12/640 PLUS (DUPLEX)	2185
APPLE LASER 8500 11 X 17	CALL
EPSON STYLUS 600/800	285/438
EPSON COLOR PHOTO / 1520	477 / CALL
EPSON STYLUS SC 3000 NEW!	1795
GCC 1212 1200 DPI 12 PPM	1399
GCC 608 11x17	2150
GCC 808 11x17	2850
GCC 616 11x17	2495
GCC 1208 11x17	3895
GCC 1208 SUPERSIZE	5350
TEKTRONIX PHASER /350	2899
TEKTRONIX PHASER 560 LASER	3950
TEKTRONIX PHASER 560 ETHERNET	4950



MONITORS



APPLE 15 AV / 1705	\$385/599
APPLE 1710 / 750 AV	759/925
APPLE VISION 850 20"	1499
RASTEROPS MC 6215	599
RASTEROPS MC 6315	677
RASTEROPS MC 19 NEW	1045
RASTEROPS MC 20	1199
RASTEROPS MC 801	1599
RASTEROPS MC 801 HR	1745
VIEWSONIC V 773	569
VIEWSONIC V 775	689
VIEWSONIC 17 GA	649
VIEWSONIC PT 775	798
VIEWSONIC GT 775	658
VIEWSONIC PT 810	1529
VIEWSONIC PT 815	1649
RADIUS 17 SR PRESSVIEW	1655
RADIUS 21 SR PRESSVIEW	CALL
RADIUS PRECISION VIEW 21	1645



DRIVES/MEDIA

**CALL
NOW!**

• EZ QUEST BUNDLES • EXCLUSIVE EXTERNAL JAZ+3 PACK CARTRIDGES		495
ZIP DR / JAZ DR	\$145 /	379
FUJITSU 640 MO		525
PINNACLE MICRO VERTEX 2.6		895
PINNACLE MICRO APEX 4.6		999
YAMAHA 6X4X CDR/TOAST		579
JAZ / YAMAHA DUO COMBO		999
EZ FLYER 230		195
SYJET 1.5 GB		445
12X EXTERNAL CD		179
SONY 4 / 8 GB EXTERNAL TAPE		995
SONY 12 / 24 GB EXT. TAPE		1269
8 GIG DISK ARRAY W/CONTROLLER		2495
18 GIG DISK ARRAY W/CONTROLLER		3450
32 GIG DISK ARRAY W/CONTROLLER		6450
10 PACK ZIP / 5 PACK JAZ	129 /	425
KODAK BLANK CD		7

SOFTWARE

ADOBE PHOTOSHOP 4.0	\$ 369
ADOBE AFTER EFFECTS	399
ADOBE PREMIERE	95
ADOBE ILLUSTRATOR	269
M.S. OFFICE 4.21	369
FINAL EFFECTS / STUDIO EFFECTS	375
FREEHAND GRAPHIC STUDIO	369

VIDEO CARDS

IMS 4 MB	\$269
IMS 8 MB	479
RADIUS THUNDER -3D	1995
THUNDER POWER 30/1920	1075
THUNDER COLOR 30/1600	1925

**SPECIAL OF THE MONTH \$999
POWER MAC 5200 8/800-CD 15" MONITOR BUILT IN**

ALL PRICES ARE CASH. NOT RESPONSIBLE FOR TYPOS. PRICES ARE SUBJECT TO CHANGE • VISA/MC/AMEX •

Say you saw it in Macworld. To purchase products advertised in this issue call the phone numbers below or use the reader service number for our Product Information Card located after the product index.

Page No.	Advertiser	Reader Svc. No.	Phone	Page No.	Advertiser	Reader Svc. No.	Phone	Page No.	Advertiser	Reader Svc. No.	Phone
161	AEC Software	203	—	13	FWB Software	34	—	39	Microtek Lab, Inc.	—	800-654-4160
111	ATI Technologies Inc	256	—	16	Farallon Computing	—	510/814-5000	4,5	Motorola Computer Group	208	800/759-1107
88	Adaptec	—	—	144	Farallon Computing	—	510/814-5000	57	Motorola Computer Group	207	800/759-1107
149	Adobe	252	800/521-1976	147	Fujitsu	202	800/626-4686	41	Multi-Ad Services	187	800/447-1950
128	Adobe	253	800/521-1976								
152	Agfa	158	800/685-4271	78	Hitachi NSA	74	800/441-4832	IBC	NEC Technologies	16	800/NEC-INFO
196	Alliance Peripheral Systems	62	800/874-1428					59	NEC Technologies	19	800/NEC-INFO
72	Alsoft	140	800/257-6381	136	Infowave	32	800/663-6222	95	Newer Technology	83	800/678-3726
61	American Power Conversion	72	800/788-2208	68,69	Iomega - Zip	—	—				
10	Anthro	—	800/325-3841	18,19	Iomega JAZ	—	—	120,121	Olympus America, Inc.	7	888/55-DIGITAL
119	Auto-des-sys	49	—	125	iX Micro	53	888/467-8282	8	Orange Micro	33	714/779-2772
179	Big Mac Computers	101	800/761-1999	202	J & R Computerworld	282	800/221-8180	33	Phillips Consumer Electronics	15	—
				203	J & R Music World	—	—	75	PhotoDisc	114	800/528-3472
								98	Playmates Interactive	10	800/223-8488
				BC	Kensington Microware Ltd.	1	800/535-4242	IFC,1	Power Computing Corporation	151	800/410-7693
				67	Kingston Technology Corporation	201	800/435-0677	194	ProDirect	135	800/524-9952
141	binuscan	6	800/881-2352	200	L.A.Trade	—	800/433-3726				
188	Bottom Line Distribution	63	800/990-5688	84,85	LA CIE	52	800/999-1332	139	QMS	288	800/523-2696
				114	Linotype-Hell	17	800/842-9721				
66	CE Software, Inc.	170	800/523-7638	180	Mac Bargains	71	800/619-9091	14,15	Ricoh Corporation	4	—
9	Caere Corporation	69	800/535-SCAN	174	Mac Professional Inc	64	800/244-4622	165	SPSS INC.	—	800/457-8287
135	Caere Corporation	68	800/535-SCAN	43	MacAcademy	106	800/527-1914	104,105	Sony Corporation	—	888/636-SONY
192,193	ClubMac	96	800/CLUB-MAC	190,191	MacConnection	145	800/800-3333	26,27	Sony Corporation	—	800/472-SONY
77	CompuServe Incorporated	—	800/530-5445	184,185	MacMall/Creative Computers	131	800/222-2808	162	Splash Technology	54	408/328-6395
181,183	Computer Discount Warehouse	2	800/4CDW					126,127	Sun Microsystems Inc	48	—
46	Dantz	26	800/225-4880	195	MacMarket	258	800/223-4622				
21	Deneba Software	57	800/733-6322	131	MacSoft	28	800/229-2714	22,23	Tektronix	—	800/835-6100
106	Deneba Software	58	800/733-6322	63	MacSoft	30	800/229-2714	12	Tenon Intersystems	76	888/2-WebTen
24	Diehl Graphsoft	46	410/290-5114	65	MacSoft	31	800/229-2714	204,205	The Mac Zone	70	800/436-0606
112,113	Digital Equipment Co	120	—	133	MacSoft	29	800/229-2714				
199	Digital Graphix	36	800/680-9062	186,187	MacWarehouse	150	—				
201	Direct Source	135	800/524-9952	81	Macromedia	37	800/945-9179	35	Umax Computer	99	888/625-UMAX
				83	Macromedia	38	800/242-1167	37	Umax Computer	100	888/625-UMAX
				96,97	Mactell Corporation	75	888/622-8355				
55	ENCAD, Inc.	65	800/45-ENCAD	168,173	Macworld Expo	—	617/361-8000	6	VST Technologies, Inc.	73	508/263-9700
156	EarthLink Network	11	888/534-7092	158	Matrox Graphics Inc	24	—	28,29	ViewSonic	59	800/888-8583
11	Epson America	—	800/BUY-EPSON	167	Maxell	22	—				
48,49	Epson America	—	800/BUY-EPSON	198	MegaHaus	245	800/786-1184	45	Winbook	8	—
70,71	Epson America	—	800/BUY-EPSON	7	MetaCreations, Corp.	6	800/846-0111				
189	Express Direct	81	800/765-0020	73	MetaCreations, Corp.	9	800/846-0111	86	Xante Corporation	112	800/926-8839
122	Extensis	13	800/796-9798	132	Microspot USA, Inc.	3	800/622-7568	155	Xerox Corporation	100	—

Macworld

Product Index

A quick and easy product index from Macworld. Simply use this index to find the page or advertiser of the products which interest you. Then, use the reader service number for our FastFacts Product Information Card located on the following page.

Page No.	Advertiser	Reader Svc. No.	Page No.	Advertiser	Reader Svc. No.	Page No.	Advertiser	Reader Svc. No.	Page No.	Advertiser	Reader Svc. No.
SOFTWARE			STATISTICAL			HARD DISKS/STORAGE			SECURITY		
BUSINESS			165	SPSS INC.	—	188	Bottom Line Distribution	63	61	American Power Conversion	72
161	AEC Software	203	UTILITIES			192,193	ClubMac	96	SYSTEMS		
CAD/CAM			72	Alsoft	140	201	Direct Source	135	96,97	Mactell Corporation	75
106	Deneba Software	58	66	CE Software, Inc.	170	147	Fujitsu	202	VIDEO		
24	Diehl Graphsoft	46	46	Dantz	26	18,19	Iomega JAZ	—	104,105	Sony Corporation	—
COMMUNICATION			13	FWB Software	34	68,69	Iomega - Zip	—	SERVICES		
126,127	Sun Microsystems Inc	48	136	Infowave	32	67	Kingston Technology Corporation	201	ON LINE		
ENTERTAINMENT			HARDWARE			167	Maxell	22	77	CompuServe Incorporated	—
63	MacSoft	30	BOARDS			198	MegaHaus	245	156	EarthLink Network	11
65	MacSoft	31	88	Adaptec	—	194	ProDirect	135	TRADESHOWS/CONFERENCES		
131	MacSoft	28	111	ATI Technologies Inc	256	INPUT DEVICES			168,173	Macworld Expo	—
133	MacSoft	29	125	iX Micro	53	BC	Kensington Microware Ltd.	1	TRAINING		
98	Playmates Interactive	10	95	Newer Technology	83	26,27	Sony Corporation	—	43	MacAcademy	106
GRAPHICS/DTP			8	Orange Micro	33	MICRO PROCESSOR			ACCESSORIES		
128	Adobe	253	COMPUTER SYSTEMS			IFC,1	Power Computing Corporation	151	FURNITURE		
149	Adobe	252	196	Alliance Peripheral Systems	62	MISCELLANEOUS			10	Anthro	—
119	Auto-des-sys	49	179	Big Mac Computers	101	61	American Power Conversion	72	MAIL ORDER		
141	binuscan	6	189	Express Direct	81	33	Phillips Consumer Electronics	15	179	Big Mac Computers	101
21	Deneba Software	57	174	Mac Professional Inc	64	14,15	Ricoh Corporation	4	188	Bottom Line Distribution	63
122	Extensis	13	4,5	Motorola Computer Group	208	162	Splash Technology	54	192,193	ClubMac	96
81	Macromedia	37	57	Motorola Computer Group	07	MULTIMEDIA			181,183	Computer Discount Warehouse	2
83	Macromedia	36	IFC,1	Power Computing Corporation	151	4,5	Motorola Computer Group	208	199	Digital Graphix	36
7	MetaCreations, Corp.	6	35	Umax Computer	99	57	Motorola Computer Group	207	201	Direct Source	135
73	MetaCreations, Corp.	9	37	Umax Computer	100	ONLINE			189	Express Direct	81
132	Microspot USA, Inc.	3	DIGITIZERS/SCANNERS			144	Farallon Computing	—	202	J & R Computerworld	282
41	Multi-Ad Services	187	152	Agfa	158	POWERBOOK			200	L.A.Trade	—
75	PhotoDisc	114	11	Epson America	—	6	VST Technologies, Inc.	73	180	Mac Bargains	71
MISCELLANEOUS			70,71	Epson America	—	PRINTERS			190,191	MacConnection	145
13	FWB Software	34	114	Linotype-Hell	17	55	ENCAD, Inc.	65	184,185	MacMall/Creative Computers	131
MULTIMEDIA			39	Microtek Lab, Inc.	—	48,49	Epson America	—	195	MacMarket	258
81	Macromedia	37	120,121	Olympus America, Inc.	7	136	Infowave	32	186,187	MacWarehouse	150
83	Macromedia	30	26,27	Sony Corporation	—	139	QMS	288	198	MegaHaus	245
NETWORKING			DISPLAY			14,15	Ricoh Corporation	4	194	ProDirect	135
16	Farallon Computing	—	78	Hitachi NSA	74	22,23	Tektronix	—	204,205	The Mac Zone	70
12	Tenon Intersystems	76	84,85	LA CIE	52	86	Xante Corporation	112	DIRECTORY		
OCR			IBC	NEC Technologies	16	155	Xerox Corporation	100			
9	Caere Corporation	69	28,29	ViewSonic	59						
135	Caere Corporation	68									
ONLINE											
156	EarthLink Network	11									

FREE

Macworld Clip Art *cd-rom*

☐ YES! Send me Macworld at the Introductory Savings Rate I've checked below. Plus, rush me the Macworld Clip Art CD-ROM – FREE with my paid order.

Name _____ please print 5SP87
 Company _____
 Address _____
 City/State/Zip _____



Macworld®

- ☐ 1 year (12 issues) - SAVE 60% - \$24.00
- ☐ 2 years (24 issues) - SAVE 67% - \$39.97
- ☐ Payment enclosed. ☐ Bill me.

Annual newsstand price \$59.88. Non-U.S. add US\$16 per year; Canadian GST included.

SUBSCRIBER SAVINGS CARD

67% OFF

ANNUAL COVER PRICE	REGULAR SUBSCRIPTION PRICE	YOUR ONE-YEAR RATE	BONUS STATUS
\$59.88	\$30.00	\$24.00	FREE CD-ROM

As a new subscriber you are entitled to a reduced rate on Macworld – 67% off the cover price. BONUS: Maximize your desktop publishing power with the *Macworld Clip Art CD-ROM* – FREE with your paid subscription.

PLUS A FREE CD-ROM!



BONUS: Clip art images, digital stock photos, fonts and more!

- ☐ 1 year (12 issues) just \$24.00. YOU SAVE 60%.
- ☐ 2 years (24 issues) just \$39.97. YOU SAVE 67%.

Name _____ (please print) 5SP79
 Company _____
 Address _____
 City _____ State _____ Zip _____

- ☐ Payment enclosed. ☐ Bill me later.

Annual newsstand price \$59.88. Non-U.S. add US\$16 per year; Canadian GST included.



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

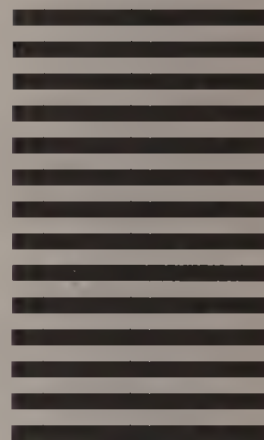
BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 1167 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld®

Subscription Department
PO Box 51666
Boulder CO 80323-1666



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 1167 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld®

Subscription Department
PO Box 51666
Boulder CO 80323-1666



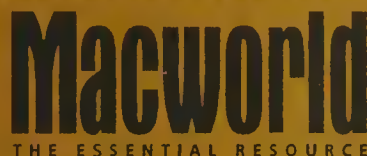
Macworld puts you in touch with the information you need most with two easy options:

1 dial 503.684.5370
Fax In Card

Simply fill in the questionnaire, circle the reader service numbers that correspond to the vendors you would like information from, then fax your form to us at 503.684.5370. FREE product information will be sent to you directly from vendors.

2 postage pre-paid
Mail In Card

After filling in the questionnaire, circle the reader service numbers that correspond to the vendors you would like information from, then just drop the postcard in the mail. Vendors will send FREE product information directly to you.



☐ Check this box to subscribe to Macworld

YOU WILL BE BILLED BY MAIL FOR A 12-MONTH SUBSCRIPTION AT ONLY \$9.99 PER YEAR. YOUR FIRST BILLING WILL BE FOR 3 MONTHS. IF YOU CANCEL BEFORE THE 3-MONTH TRIAL PERIOD ENDS, YOU WILL BE BILLED FOR THE FULL YEAR. NO REFUND.

PLEASE ANSWER THESE QUESTIONS, CHECK ALL ANSWERS THAT APPLY

1a. For which of the following Mac-related products do you specify, recommend, approve, purchase or influence the purchase?

1b. Which of the following do you plan to purchase in the next 12 months? (Check all that apply.)

- | | | | |
|-------------------------------------------|-----------------------|----|-----------------------|
| Desktops/PowerBooks | <input type="radio"/> | 1 | <input type="radio"/> |
| Monitors | <input type="radio"/> | 2 | <input type="radio"/> |
| Printers | <input type="radio"/> | 3 | <input type="radio"/> |
| Storage Devices | <input type="radio"/> | 4 | <input type="radio"/> |
| Networking/Data Communications | <input type="radio"/> | 5 | <input type="radio"/> |
| Internet/Intranet products/services | <input type="radio"/> | 6 | <input type="radio"/> |
| Software: business/productivity | <input type="radio"/> | 7 | <input type="radio"/> |
| graphics/design | <input type="radio"/> | 8 | <input type="radio"/> |
| interactive publishing/ | | | |
| multimedia | <input type="radio"/> | 9 | <input type="radio"/> |
| entertainment | <input type="radio"/> | 10 | <input type="radio"/> |
| education | <input type="radio"/> | 11 | <input type="radio"/> |
| other software | <input type="radio"/> | 12 | <input type="radio"/> |
| Any other products | <input type="radio"/> | 13 | <input type="radio"/> |

2. Are you employed, and involved in purchase decisions for 5 or more Macs? ☐ Yes (1) ☐ No (2)

3. What's Your Opinion?

What are your main frustrations in making Mac-related purchase decisions?

- ☐ 1. Lack of expertise in assessing products
- ☐ 2. Difficulty in installing or using products
- ☐ 3. Too many choices
- ☐ 4. Not enough choices
- ☐ 5. Unclear needs
- ☐ 6. Concern that cheaper, better products are about to come out
- ☐ 7. Other (please specify) _____

PRODUCT CATEGORY INFORMATION

For information on all of the products mentioned in an article or an entire category of advertised products, circle the appropriate number below.

- 951 Mail Order Companies
- 952 Printers
- 953 Scanner & Digital Cameras
- 954 Online/Internet
- 955 Storage Devices
- 956 Monitors & Graphics Boards
- 957 Utilities
- 958 Clip Art & Fonts
- 959 Memory
- 960 Draw/Paint/DTP Software
- 961 Image-Editing Software
- 962 Other Graphics Software

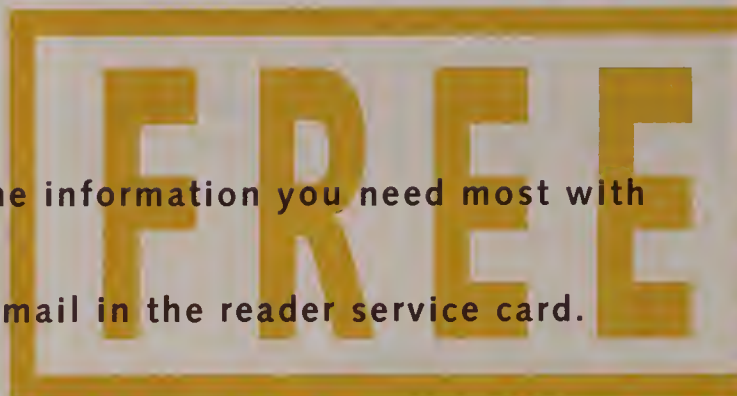
READER SERVICE NUMBERS FOR ADVERTISED PRODUCTS CAN BE FOUND IN THE PRODUCT'S AD AND IN BOTH THE ADVERTISER INDEX AND PRODUCT INDEX.

1	2	3	4	5	146	147	148	149	150	291	292	293	294	295	461	462	463	464	465	531	532	533	534	535
6	7	8	9	10	151	152	153	154	155	296	297	298	299	300	466	467	468	469	470	536	537	538	539	540
11	12	13	14	15	156	157	158	159	160	401	402	403	404	405	471	472	473	474	475	541	542	543	544	545
16	17	18	19	20	161	162	163	164	165	406	407	408	409	410	476	477	478	479	480	546	547	548	549	550
21	22	23	24	25	166	167	168	169	170	411	412	413	414	415	481	482	483	484	485	551	552	553	554	555
26	27	28	29	30	171	172	173	174	175	416	417	418	419	420	486	487	488	489	490	556	557	558	559	560
31	32	33	34	35	176	177	178	179	180	421	422	423	424	425	491	492	493	494	495	561	562	563	564	565
36	37	38	39	40	181	182	183	184	185	426	427	428	429	430	496	497	498	499	500	566	567	568	569	570
41	42	43	44	45	186	187	188	189	190	431	432	433	434	435	501	502	503	504	505	571	572	573	574	575
46	47	48	49	50	191	192	193	194	195	436	437	438	439	440	506	507	508	509	510	576	577	578	579	580
51	52	53	54	55	196	197	198	199	200	441	442	443	444	445	511	512	513	514	515	581	582	583	584	585
56	57	58	59	60	201	202	203	204	205	446	447	448	449	450	516	517	518	519	520	586	587	588	589	590
61	62	63	64	65	206	207	208	209	210	451	452	453	454	455	521	522	523	524	525	591	592	593	594	595
66	67	68	69	70	211	212	213	214	215	456	457	458	459	460	526	527	528	529	530	596	597	598	599	600
71	72	73	74	75	216	217	218	219	220	PLEASE PRINT OR TYPE ALL INFORMATION. Expires Feb. 25, 1998. N1 November 1997														
76	77	78	79	80	221	222	223	224	225	Name _____														
81	82	83	84	85	226	227	228	229	230															
86	87	88	89	90	231	232	233	234	235	E-mail _____														
91	92	93	94	95	236	237	238	239	240															
96	97	98	99	100	241	242	243	244	245	Address _____														
101	102	103	104	105	246	247	248	249	250															
106	107	108	109	110	251	252	253	254	255	City _____														
111	112	113	114	115	256	257	258	259	260															
116	117	118	119	120	261	262	263	264	265	State _____ Zip _____														
121	122	123	124	125	266	267	268	269	270															
126	127	128	129	130	271	272	273	274	275	Title _____														
131	132	133	134	135	276	277	278	279	280															
136	137	138	139	140	281	282	283	284	285	Company _____														
141	142	143	144	145	286	287	288	289	290															
										Phone _____ Fax _____														

TWO SIMPLE WAYS TO GET **FREE** PRODUCT INFORMATION

Macworld
THE ESSENTIAL RESOURCE

Macworld puts you in touch with the information you need most with
two easy options — fax back or mail in the reader service card.



Fax back. Mail in. Just don't miss out.

Fold here and close with tape. Do not staple.



50% TOTAL RECOVERED FIBER
10% POST-CONSUMER FIBER



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 677 PORTLAND OR

POSTAGE WILL BE PAID BY ADDRESSEE

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



READER SERVICE DEPARTMENT
12950 SW PACIFIC HWY STE 7
TIGARD OR 97223-9747





Westwood Computers & Networking

Toll Free (800) 761-1999



TRUEVISION

First in Digital Video

For International orders: Tel (310) 235-1780 • Fax (310) 235-1790

<http://www.wcn.com>

CHECK OUR WEB PAGE FOR DAILY SPECIALS

BIG MAC

SPECIALS!

PowerMacs 9600's

350MHz 64/4GB/24XCD/KB.....\$4899

300MHz 64/4GB/24XCD/KB.....\$3899

PowerMac 7300/180/Dos

32/16/2GB/12XCD/KB.....\$2699

Apple Powerbook 3400's

200MHz 16/2GB/12XCD.....\$3395

240MHz 16/3G/12XCD.....\$3995

Apple Color Monitor

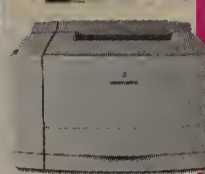
20" (M850).....\$1450

Apple Laserwriter Printer

16/600.....\$1599

12/640.....\$1250

Stylewriter 2200.....\$199



POWERMACS

9600/350 64/4GB/24xCD/4MB/Zip \$4899

9600/300 64/4GB/24xCD/4MB/Zip \$3899

9600/233 32/4GB/12xCD/4MB \$2895

9600/200MP 32/4GB/12xCD/kb \$3395

9600/200 32/4GB/12xCD/kb \$2695

9500/180MP 32/2GB/CD/2MB ATI \$2595

8600/300 32/4GB/24xCD/Zip \$3350

8600/200 32/2GB/12xCD/Zip \$2495

7300/200 32/2GB/12xCD/kb \$2195

7300/180 16/2GB/12xCD/kb \$1795

7300/180DOS 32/4GB/24xCD/Dos Card \$2699

6500/300 603e 64/4GB/12xCD/33.6/Zip \$2499

6500/275 603e 32/4GB/12xCD/Creative \$2499

6500/250 603e 32/4GB/12xCD/33.6/ZIP \$1795

6500/225 603e 32/3GB/12xCD/33.6 \$1650

4400/200 603e 16/2GB/8xCD \$1350

POWER BOOKS

2400c NEW \$3295

3400c/240 32/3GB/CD/Ethernet \$3995

3400c/200 16/2GB/CD/33.6 \$3595

3400c/180 16/1.3GB/CD/33.6 \$3295

1400c/166 16/2GB/8XCD \$2799

1400c/133 16/1.3GB/6XCD \$2395

1400cs/133 16/1.3GB/8XCD \$Call

1400cs/117 12/1GB/8XCD \$Call

PERFORMA

6400/200 16/1.6/CD \$1050

6360/160 16/1.2/CD/28.8/kb \$899

6400/180 16/1.6/CD/KB/28.8 \$999

MONITORS

APPLE 15"/15"AV \$365/399

APPLE 1705/ G750 17" \$635/899

APPLE 850 20" \$1450

SONY 100SX/200SF \$439/749

MITSUBISHI 91TXM 21" \$1450

All VIEWSONIC Models are available \$CALL

APPLE PARTS

Apple 166MHz Pentium DOS Card \$750

9500/8100-110 LOGIC BOARD \$599/799

150/180 MHz PROCESSOR \$199/399

200/233 MHz PROCESSOR \$595/695

Demo Units

8100/80 8/500/CD \$799

6100/60 8/500/CD \$599

7100/66 8/500/CD \$799

High End Bundle

Apple PowerMac 9600/350
128Mb Ram 4 GB HD 24xCD
Zip/KB 4MB VideoCard/Mouse
Apple 20" Color Monitor



\$6699

SCANNERS

Linotype-Hell

LinoColor Saphir A4 \$1625

LinoColor Jade \$459

AGFA

Arcus II \$1499

StudioStar \$929

SnapScan \$299

ATTO

Express PCI Single Channel \$349

Express PCI Multi Channel \$685

ExpressRAID Pro Tools \$279

Silicon Express IV Single Ch \$579



PowerComputing



MEDIA 100
Digital Video System

Media 100 qx \$1896

Media 100 qx w/com \$3499

Media 100 le \$4450

Media 100 lx \$8995

Media 100 xe \$12,950

Media 100 xs \$19,995

Software & Add On's

YAMAHA 4X6X CDR/Toast \$699

RICOH CDRW 2X6X MP6200S \$645

4GB HARD DRIVE INT. \$389

ADOBE PHOTOSHOP 4.0 \$349

ADOBE PAGEMAKER 6.5 \$349

MACROMEDIA FREEHAND 7.0 \$299

ADOBE AFTEREFFECTS 3.1 \$350

ADOBE PREMIER 4.2 \$99

ADOBE PRODUCTION BUNDLE \$1299

PRINTERS

APPLE COLOR 12/660 \$4595

APPLE SW 4100 \$210

APPLE SW 4500 \$298

APPLE SW 6500 \$413

APPLE LASERWRITER 8500 \$2595

EPSON STYLUS COLOR 800 \$439

NewGen Printers

Design XP6 600dpi/11x18/16ppm \$2150

DXpress6 600dpi/11x18/16ppm \$2550

DXpress+12 1200dpi/11x18/16ppm \$4350

UMAX®

Model/MHz Ram/HD/CD/Vram Price

S900L/233 32MB/2.1GB/8X/8M \$2669

S900L/250 32MB/2.1GB/8X/8M/ZIP \$3369

S900L/200DP 32MB/2.1GB/8X/4M \$2920

S900L/250DP 64MB/4GB/12X/8M/ZIP \$6150

1831 Pontius Ave., Los Angeles, CA 90025 or E-Mail us at WCN@Earthlink.net Not responsible for typos.

Fortune 500 • Schools • Government • International Orders, Visa, MC & Amex welcome. Subject to change w/o notice & limited qty. All prices are COD. All other forms of payment are 3% higher. Prices subject to change without notice.

MAC BARGAINS\$®

Buy with Confidence Online from MAC BARGAINS\$.

- **NEW!** To place an order, e-mail mac.bargains@mzi.com
- **NEW!** For detailed product information, e-mail mac.bargains.info@mzi.com
- Over 2500 products in stock

Apple® Computers

- PowerPC™ 601, 603e and 604e processors
- Spacious hard drives – up to 4GB

As Low As **\$749**



Apple Computer, Inc.

Apple Model	Item #	ONLY
Apple Workgroup Server 6150	#81518	\$749.00
Apple Color StyleWriter 2500	#87135	\$189.98
Power Mac 4400/200	#80896	\$1499.00
Power Mac 8600/300	#70749	\$3699.00

And many more! Call today!

UMAX® SuperMac Computers

- Upgradable PowerPC™ 603e and 604e processors running at up to 250MHz
- Spacious 1.2GB or 2.1GB hard drives UMAX

As Low As **\$995**

SUPERmac

UMAX Model	Item #	ONLY
SuperMac C500LT/200	#74738	\$995
SuperMac C600/200	#81532	\$1195
SuperMac S900L/200	#90935	\$2495
SuperMac S910/250	#74740	\$4395
SuperMac S910/250DP	#74741	\$6995

Ask your Sales Advisor about the complete SuperMac line.

StarMax™ Computers

- 200, 233, 225, or 300MHz PowerPC™ 603e, 604e & 750 processors
- 16 or 32MB RAM, expandable to 1GB

As Low As **\$1999**

Motorola

Motorola Model	Item #	ONLY
StarMax 5000/225 MT	#78199	\$1999
StarMax 5000/300 MT	#78196	\$2899
StarMax 5500/200 MT	#78194	\$2999
StarMax 6000 Pro/223	#74732	\$3895

Call us now to find out more about the full line of StarMax Computers!

PowerComputing

PowerTower and PowerBase Computers

- PowerPC™ 603e, 604e and 750 processors
- Up to a spacious 2GB hard drive

As Low As **\$1399**

Power Computing

Power Computing Model	Item #	ONLY
PowerBase 200 LP	#78239	\$1399
PowerBase 240 MT	#78238	\$1699
PowerTower Pro G3/250	#74716	\$4295
PowerTower Pro G3/275	#74717	\$4795

And more! Call today! While supplies last.

Software		
Adobe		
93952	Adobe Acrobat 3.0.1	\$184.98
88827	Adobe After Effects 3.1 CD	\$648.98
88205	Adobe Illustrator 7.0 Upgrade CD	\$124.98
37611	Adobe PageMaker 6.5 t/WIn95 Comp Upgr	\$118.98
83068	Adobe PageMaker 6.5 Upgrade	\$89.98
77685	Adobe PageMaker w/Free Action Pack	\$548.98
88414	Adobe PageMill 2.0.1	\$98.98
83932	Adobe PageMill 2.0.1 Upgrade	\$48.98
83084	Adobe Photoshop 4.0 Upgrade	\$164.98
77685	Adobe Photoshop 4.0 w/Free Action Pack	\$548.98
04670	Adobe Premiere 4.2 CD	\$488.98
03971	Adobe Streamline 4.0	\$128.98
AEC Software		
03456	Fast Track Schedule 4.0 PowerMac or Mac	\$166.44
Aladdin		
85624	CyberFinder	\$16.85
05827	StuffIt Deluxe 4.0	\$65.71
Berkeley Systems		
83662	AfterDark 4.0	\$27.75
83667	You Don't Know Jack Sports	\$27.45
Bestware		
99042	MYD8 Accounting w/Payroll 7.0	\$120.52
Coere		
91304	DmniPage Pro 7.0 Upgrade	\$114.98
Cosody and Greene		
85263	Spell Catcher	\$48.98
Claris		
86444	Claris Organizer 2.0	\$62.80
75368	ClarisWorks Office	\$88.98
52485	FileMaker Pro 4.0	\$179.98
52486	FileMaker Pro 4.0 Upgrd CD/3.5"	\$88.98
Connectix		
84048	Connectix RAM Doubler 2.0	\$52.56
90375	Connectix Speed Doubler for Mac	\$54.98
Corel		
91628	Corel GALLERY 2 (Mac)	\$34.16
92234	Corel Stock Photo Library 1	\$869.98
84052	CorelDraw 6 Suite Comp/Ver Upgrade	\$138.76
03972	WordPerfect 3.5 Full Version CD-RDM	\$155.48
83933	WordPerfect 3.5.1 C/V Upgrade CD-RDM	\$80.79
Dantz		
02586	Dantz Retrospect 4.0	\$136.65
04194	Dantz Retrospect Network Backup Kit 4.0	\$269.98
Dotoviz		
96908	MacLink Plus/Translator Pro 8.0	\$87.01
96908	MacLink Plus/Translator Pro 9.0	\$87.01
Dotowatch		
02077	Virex 5.7 for Mac	\$64.98
Davidson & Associates		
82303	WarCraft: Battle Chest	\$49.98
Delorme		
96777	Street Atlas USA 3.0	\$37.81
Equilibrium		
98360	DeBabelizer Toolbox 1.6	\$233.01
Extensis		
77416	PhotoTools 1.1	\$88.76
91343	OXTools 2.0	\$88.76
FWB Software		
06271	CD-RDM Toolkit 2.0	\$46.72
00555	Hard Disk Toolkit 2.0	\$116.80
05476	Hard Disk Toolkit Personal Ed 2.0	\$46.72
GraphSoft		
97781	MiniCad 6.0	\$520.04
Infowave		
00642	PowerPrint 3.0.2	\$90.64
82867	StyleScript 3.6	\$90.64
Insignio		
87440	SoftWindows 95 v4.0	\$189.98
91088	SoftWindows for Performance	\$115.63
Intuit		
93222	Quickbooks 4.0 for Mac	\$112.79
98653	Quickbooks Pro 4.0 for Mac	\$182.92
04230	Quicken 7 for Mac	\$39.98
98685	Quicken Deluxe 7 for Mac	\$58.40
Jump Development		
92896	RAM Charger 3.0	\$29.20
Leister Productions		
05984	Reunion 4.0 The Family Tree Software	\$88.76
Macromedia		
92266	Director 6 Multimedia Studio	\$988.98
86007	Director 6 Multimedia Studio Upgrade	\$489.98
82501	FreeHand 7	\$388.98
84212	FreeHand 7 Comp Upgrade	\$148.98
84242	FreeHand 7 Version Upgrade	\$148.98
92290	FreeHand Graphic Studio 7	\$488.98
MetoCreations		
81843	8ryce 2.0	\$149.44
37624	Dabbler 2.0 CD	\$44.98
84479	Kal's Power Goo	\$48.98
06668	Kal's Power Tools 3.0	\$124.98
93967	Painter 5 Upgrade for Mac	\$98.98
91289	Poser 2.0	\$124.98
Micromot		
87067	TechTool Pro	\$84.27
Microsoft		
37803	Cinemania 97 for Mac CD	\$29.98
95750	Encarta 97 Mac CD	\$69.98
04545	Excel 5.0 for Mac Version Upgrade	\$118.98
04293	Flight Simulator 4.0 Mac	\$44.98
83316	Office 4.21 Upgrade w/Essential Tools	\$274.98
00596	Word 6.0.1 Version Upgrade t/Mac	\$118.98
05750	Works 4.0 for Mac	\$48.98
Now Software		
76597	New Utilities w/Free Now TouchBase	\$79.98
80599	Now Synchronize 1.0 for Palm Pilot	\$33.98
ParSoft		
88389	A-10 Attack CD-ROM	\$43.26
Quotcomm		
85325	Eudora Pro 3.1 Upgrade	\$34.98

Quark		
82500	QuarkXPress 3.32 Native PowerPC	\$657.37
95320	QuarkXPress 3.32 Native PowerPC	\$635.46
Symontec		
06231	ACT! 2.8 for Mac	\$149.98
04890	Norton Utilities 3.5	\$94.98
93976	Norton Utilities 3.5 Upgrade	\$44.98
81746	SAM 4.5 Upgrade	\$28.98
80142	Suitecase 3.0 Upgrade	\$39.98
Monitors		
Hitachi		
91096	Rasterops SuperScan MC 20"	\$1250.00
78921	Rasterops SuperScan MC 801 21"	\$1605.56
NEC		
27642	NEC MultiSync C400 14" Monitor	\$295.98
80669	NEC MultiSync E1100 21" Monitor	\$1459.00
86793	NEC MultiSync M700 Ctr 17" Monitor	\$769.98
Sony		
82687	Sony Multiscan 100sf 15" Monitor	\$378.33
82686	Sony Multiscan 100sf 15" Monitor	\$363.89
06687	Sony Multiscan 200sf 17" Monitor	\$749.98
06689	Sony Multiscan 200sf 17" Monitor	\$649.98
82688	Sony Multiscan 300sf 20" Monitor	\$1433.89
ViewSonic		
87259	ViewSonic 17EA 17" Multimedia Monitor	\$559.98
88429	ViewSonic 17GA 17" Monitor	\$639.98
82695	ViewSonic G800 20" Monitor	\$1129.00
29932	ViewSonic PT770 17" Monitor	\$699.98
Video Cards		
RADIUS		
84143	Radius Thunder 3D Video Card	\$1927.17
90920	Radius Video Vision Studio PCI	\$2801.98
Modems		
Boco		
82055	FastMac 33.6 Faxmodem w/\$20 Rebate *Price after Rebate	\$74.32
Global Village		
89312	PowerPort Platinum Pro V.34/10-T PC Card	\$320.45
89313	PowerPort Platinum V.34 PC Card	\$201.14
78003	TelePort Internet Edition 33.6 Fax/Modem w/\$50 Coupon	\$98.98
Megahertz		
86528	CruiseCard Cellular Ready XJack 288 Mac	\$229.98
82770	Sportster 28.8 PC Card t/PB	\$186.36
Supra		
83465	Supra FAXModem V.34 33.6 External Mac	\$139.98
74908	SupraExpress 33.6 V.34 *after \$20 Mfr. Mail in Rebate	\$64.98
U.S. Robotics		
75945	Sportster 33.6 V.34 After \$20 Mfr. Rebate	\$43.36
46326	Sportster 56K External *Price After \$50 Mfr. Mail-In Rebate	\$63.36
82064	Sportster 56K External Faxmodem	\$217.98
Storage		
Iomega		
25659	Jaz 1GB External Drive	\$399.95
91825	Zip 100MB External SCSI Drive	\$149.95
LoCie		
78854	LaCie 3.24GB Fireball TM SCSI Ext HD	\$481.82
82194	LaCie Fireball TM 1.28GB Ext SCSI HD	\$337.50
82193	LaCie Fireball TM 1.28GB Int SCSI HD	\$260.23
81241	LaCie Fireball TM 2.16GB SCSI Int HD	\$337.50
MicroTech		
86174	MicroTech 200MB SyQuest External Drive	\$396.59
81085	Polaris II 1GB Ext HD	\$351.14
78844	Road Runner 1GB PowerBook Drive	\$655.68
Performance		
78372	Performantz 12X CD-Rom Drive	\$169.98
VST		
80953	VST Expan 8ay 230MB MO Or. t/PowerBook 1400	\$426.09
Scanners		
AGFA		
02135	AGFA Arcus II Scanner, Mac Version	\$1597.80
06686	AGFA StudioStar	\$899.98
06685	AGFA StudioStar LE	\$749.98
Epson		
91939	Epson ES-1000C Flatbed	\$476.40
82671	Epson Expression 636 Executive	\$762.92
82673	Epson Expression 636 Professional	\$1335.96
82659	PhotoPC 500 Color Digital Camera	\$448.31
Microtek		
06673	ScanMaker E3	\$179.78
06672	ScanMaker E6 Standard	\$299.98
78922	ScanMaker III w/TMA	\$1398.00
UMAX		
77120	ASTRA 1200S w/Photoshop	\$599.98
80679	Astra 600S	\$199.98
83509	Powerlook II w/Photoshop	\$1332.58
Visioneer		
77102	PaperPort Strobe t/Mac	\$329.98
78931	Visioneer PaperPort VX w/SCSI Cable	\$183.15
Printers		
Epson		
80667	Stylus Color 600 InkJet	\$299.98
80668	Stylus Color 800 InkJet	\$399.98
87980	Stylus Color Pro XL InkJet	\$1499.00
90488	Multi-Protocol Ethernet Interface	\$382.02
Hewlett-Packard		
89150	HP DeskJet 1600CM Color Printer	\$1925.00
86809	HP DeskJet 340CM Portable Printer	\$299.98
36156	HP DeskJet 870Cse InkJet Printer	\$399.98
88902	HP DeskWriter 600 Printer	\$149.98
86345	HP DeskWriter 680C InkJet Printer	\$289.98
82666	HP LaserJet GMP Printer	\$929.53
13692	HP Tri-Chamber ColorPrint Cartridge	\$25.13
Surge/Back-up		
American Power Conversion		
94359	APC Back-UPS 200	\$88.02
99364	APC Back-UPS 400	\$139.98
05901	APC Back-UPS 450	\$169.98
11651	APC Back-UPS 600	\$235.98
94396	APC Personal Surge Arrest 7 Outlet	\$14.88
94395	APC Personal Surge Arrest 7 Outlet w/Phone	\$19.92
94393	APC Professional Surge Arrest 7 Outlet w/Phone	\$29.98



Great Prices
on the Complete Line of Apple Computers

Mac OS 8 **CLARIS**

Only **\$48.98***

Mac OS 7.6 to 8 Upgrade

- Superior color capabilities
- Exceptional picture-handling
- Precise typographic controls



Clariss Corporation #75358

*After \$20 Mail-in Rebate. Low MacBargains price \$68.98



Fuji Mac-Formatted Zip 100MB 10-Pack with FREE Disposable Camera

Fuji #51710

*10-pack price after \$20 Mfr. Mail-in Rebate \$98.98. Low MacBargains price \$118.98

WHY PAY MORE
when you can get a better price from **MAC BARGAINS\$?**

1-800-619-9091

FAX: 1-425-430-3420

E-Mail Address: mac.bargains@mzi.com

707 South Grady Way, Renton, WA 98055-3233

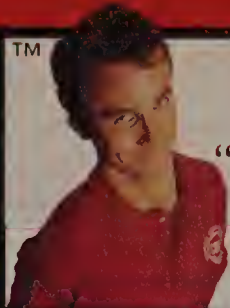
Copyright ©1997 Mac Bargains® is a registered trademark of Multiple Zones International, Inc. All rights reserved.



**COMPUTER
DISCOUNT
WAREHOUSE**

**The right price.
The right advice.**

TM



"Call **CDW**® for all
of your **Apple** needs!"



\$100 CDW® INSTANT REBATE!*

**APPLE®
POWER
MACINTOSH®
COMPUTERS**

Includes keyboard and mouse, monitor sold separately



CPU
RAM
HARD DRIVE
CD-ROM
MODEM



Power Macintosh 4400

200MHz PowerPC 603e
32MB
2GB
12X
—

\$1599.00 CDW 86930



Power Macintosh 6500

PowerPC 603e
32MB
3GB or 4GB
12X
33.6K bps

225MHz/3GB **\$1599.00** CDW 86928
275MHz/4GB **\$2499.00** CDW 89617
300MHz/4GB w/Zip **\$2499.00** CDW 89618



Power Macintosh 6500

PowerPC 603e
32MB, 48MB or 64MB
4GB or 6GB
24X
56.6K bps

250MHz **\$1999.00** CDW 96154
275MHz w/Zip **\$2499.00** CDW 96157
275MHz w/Zip **\$2799.00** CDW 96156
300MHz w/Zip **\$2999.00** CDW 96158

**APPLE®
POWER
MACINTOSH®
COMPUTERS**

Includes keyboard and mouse, monitor sold separately



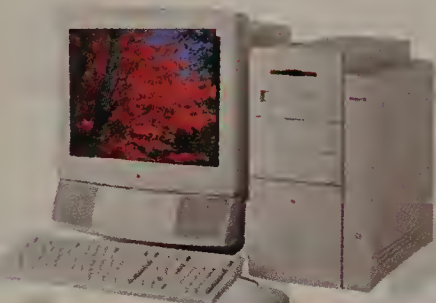
CPU
RAM
HARD DRIVE
CD-ROM
MODEM



Power Macintosh 7300

PowerPC 604e
16MB or 32MB
2GB
12X
—

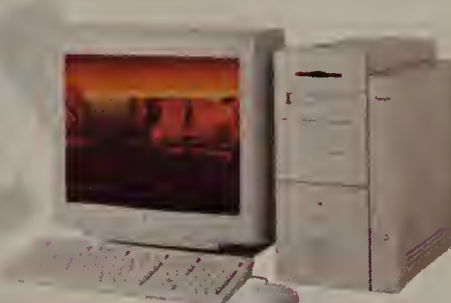
180MHz **\$1999.00** CDW 82106
200MHz **\$2199.00** CDW 82107



Power Macintosh 8600

PowerPC 604e
32MB
4GB
24X
—

250MHz with Zip **\$3199.00** CDW 95335
300MHz with Zip **\$3699.00** CDW 93530



Power Macintosh 9600

PowerPC 604e
64MB
4GB
24X
—

300MHz with Zip **\$4599.00** CDW 93482
350MHz with Zip **\$5399.00** CDW 93531

**APPLE®
MACINTOSH®
POWERBOOK®
COMPUTERS**



CPU
RAM
HARD DRIVE
CD-ROM
MODEM
COLOR DISPLAY



Macintosh PowerBook 1400

133MHz or 166MHz PowerPC 603e
16MB
1.3GB or 2GB
8X
—

11.3" dual-scan or active-matrix
1400cs/133 **\$2499.00** CDW 92455
1400c/133 **\$2999.00** CDW 92456
1400c/166 **\$3499.00** CDW 92457



Macintosh PowerBook 2400c

180MHz PowerPC 603e
16MB
1.3GB
—
—

10.4" active-matrix
\$3499.00 CDW 92442



Macintosh PowerBook 3400

180MHz, 200MHz or 240MHz PowerPC 603e
16MB
1.3GB, 2GB or 3GB
12X
—

12.1" active-matrix
180MHz **\$3999.00** CDW 90187
200MHz **\$4499.00** CDW 90188
240MHz **\$5499.00** CDW 85220

*\$100 CDW® instant rebate off advertised price applied at purchase. Offer ends 10/31/97.

**Subtract \$100 from our advertised prices
on all Apple® Macintosh® computers!**

800-509-4239

www.cdw.com

©1997 CDW® Computer Centers, Inc.
MW3276A 11/97 200 N. Milwaukee Avenue, Vernon Hills, IL 60061



**COMPUTER
DISCOUNT
WAREHOUSE**

**The right price.
The right advice.**

We offer you

“Get more than
just a great price.
Call today and get a
little empathy,
some free advice
and a free CDW
catalog.”



EPSON® Stylus Color 800



■ 4-color (CMYK) drop-on demand
Micro Piezo ink jet print technology
■ 1440 x 720 dpi photo quality
color and laser quality
black text on premium
paper ■ 720 x 720 dpi
photo quality color and
laser quality black text
on plain paper
■ Print speeds: up to 8
ppm black; up to 7 ppm color ■ Supports Apple
LocalTalk networks, optional Adobe PostScript
Level 2

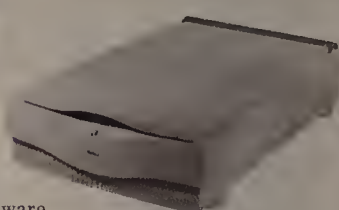


\$399.00 CDW 80666

UMAX®

Astra 1200S

■ 600 x 1200 dpi optical,
9600 dpi interpolated
resolution ■ Single pass
■ 30-bit color scanning
mode ■ Newssoft Presto!
PageManager with OCR,
Adobe Photoshop V4.0 for
Macintosh, UMAX Copy
Utility and VistaScan software
interfaces



\$539.48 CDW 88606

HARDWARE, SOFTWARE & PERIPHERALS AT DISCOUNT PRICES!

COMPUTERS



Apple® Power Macintosh® Series

4400 200MHz PowerPC	
32MB 2GB 12X CD	1599.00
4400 PC compatible 200MHz PowerPC	
603e/166MHz Intel Pentium processor	2399.00
6500 225MHz PowerPC	
32MB 3GB 12X CD	1599.00
6500 250MHz PowerPC	
48MB 4GB 12X CD Zip drive	2099.00
6500 275MHz PowerPC	
32MB 4GB 12X CD	2499.00
6500 300MHz PowerPC	
64MB 4GB 12X CD Zip drive	2499.00
7300 180MHz PowerPC 604e	
16MB 2GB 12X CD	1999.00
7300 200MHz PowerPC 604e	
32MB 2GB 12X CD	2399.00
7300 PC compatible 180MHz PowerPC	
604e/166MHz Intel Pentium processor	3199.00
8600 250MHz PowerPC 604e	
32MB 4GB 24X CD Zip drive	3199.00
8600 300MHz PowerPC 604e	
32MB 4GB 24X CD Zip drive	3699.00
9600 300MHz PowerPC 604e	
64MB 4GB 24X CD iomega Zip drive	4599.00
9600 300MHz PowerPC 604e	
64MB 4GB 24X CD	4499.00
9600 350MHz PowerPC 604e	
64MB 4GB 24X CD iomega Zip drive	5399.00
9600 350MHz PowerPC 604e	
64MB 4GB 24X CD	5299.00

Apple® Macintosh® PowerBook® Series

1400cs 133MHz PowerPC 603e	
16MB 1.3GB 11.3" dual 8X CD	2499.00
1400c 133MHz PowerPC 603e	
16MB 1.3GB 11.3" active 8X CD	2999.00
1400c 166MHz PowerPC 603e	
16MB 2GB 11.3" active 8X CD	3499.00
2400c 180MHz PowerPC 603e	
16MB 1.3GB 10.4" active	3499.00
3400c 180MHz PowerPC 603e	
16MB 1.3GB 12.1" active 12X CD	3999.00
3400c 200MHz PowerPC 603e	
16MB 2GB 12.1" active 12X CD	4499.00
3400c 240MHz PowerPC 603e	
16MB 3GB 12.1" active 12X CD	5499.00

MOTOROLA

StarMax 5000 Series Mini-towers

225MHz PowerPC 603e	
32MB 2.5GB 16X CD 10BT	1650.00
225MHz PowerPC 603e	
32MB 2.5GB 16X CD	1650.00
250MHz PowerPC 603e	
32MB 2.5GB 16X CD iomega Zip drive	1850.00
275MHz PowerPC 603e 32MB	
4.3GB 16X CD iomega Zip drive 10BT	2350.00
300MHz PowerPC 603e 32MB	
4.3GB 16X CD iomega Zip drive 10BT	2450.00
300MHz PowerPC 603e 32MB	
4.3GB 16X CD iomega Zip drive 10/100	2950.00
200MHz PowerPC 604e 64MB	
4.3GB 16X CD iomega Zip drive 10/100	2750.00

StarMax Pro 6000 Series Mini-towers

233MHz PowerPC 750 32MB 2GB	
24X CD iomega Zip drive 10BT	3895.00
266MHz PowerPC 750 64MB 2GB	
24X CD iomega Zip drive 10BT	4595.00

UMAX

SuperMac Series Desktops

C500LT 180MHz PowerPC	
603e 16MB 1.2GB 8X CD	945.00
C500LT 200MHz PowerPC	
603e 16MB 2GB 8X CD	945.00
C500e 200MHz PowerPC	
603e 16MB 2GB 12X CD 10BT	1095.00
C500i 200MHz PowerPC	
603e 16MB 2GB 12X CD	1095.00
J700 180MHz PowerPC	
604e 24MB 2.1GB 8X CD	1795.00

COMPUTERS

UMAX

SuperMac Series Mini-towers

C600 200MHz PowerPC	
603e 16MB 2.1GB 8X CD	1195.00
C600e 200MHz PowerPC 603e	
32MB 2.1GB 12X CD 10BT Zip drive	1695.00
C600LT 240MHz PowerPC	
603e 24MB 2GB 12X CD	1395.00
C600x 240MHz PowerPC	
603e 32MB 3GB 12X CD 10BT	1795.00
C600x 280MHz PowerPC	
603e 32MB 4GB 12X CD 10BT	2195.00

SuperMac Series Mini-towers

S900 200MHz PowerPC	
604e 32MB 2.1GB 8X CD 10BT	2495.00
S900 2x200MHz PowerPC	
604e 32MB 2.1GB 8X CD 10BT	3495.00
S900 233MHz PowerPC	
604e 32MB 2.1GB 8X CD 10BT	2995.00
S910 250MHz PowerPC	
604e 64MB 4GB 24X E100	4395.00
S910 2x250MHz PowerPC	
604e 64MB 4GB 24X E100	6995.00

PDA's

eMate 300	799.00
-----------	--------

MONITORS

MultipleScan 15AV 15" 0.28mm	388.46
MultipleScan 1705 17" 0.28mm	628.74
AppleVision 1710 17" 0.26mm	779.58
AppleVision 850 20" 0.26mm	1849.00



DX700T 17" 0.25mm	635.42
DJ702E 17" 0.28mm	566.32
DJ920 21" 0.28mm	1508.52

MAGNAVOX

MB5314 15" 0.28mm	339.03
MB7000 17" 0.28mm	509.18

NEC

XV15+ 15" 0.25mm	378.31
XV17+ 17" 0.25mm	667.76
P750 17" 0.25mm	849.20
E500 15" 0.25mm	374.91
E1100 21" 0.28mm	1359.09

SONY

100sx 15" 0.25mm	329.00
100sf 15" 0.25mm	369.54
200sx 17" 0.25mm	607.81
200sf 17" 0.25mm	709.67
17se2t 17" 0.25mm	859.52
300sf2t 20" 0.30mm	1398.75
GDM-W900 24" 0.25mm	4297.28

ViewSonic®

E641 14" 0.28mm	209.66
E655 15" 0.28mm	289.59
G771 17" 0.27mm	556.28
17GA 17" 0.27mm	609.02
GT770 17" 0.25mm	634.32
GT775 17" 0.25mm	678.91
PT770 17" 0.25mm	678.91
PT775 17" 0.25mm	786.04
GT800 20" 0.30mm	1147.05
G810 21" 0.25mm	1289.91
P810 21" 0.25mm	1384.64
PT813 21" 0.28mm	1495.06
P815 21" 0.25mm	1546.97

VIDEO BOARDS



Nexus GA 8MB PCI	496.20
Xclaim TV external TV tuner	79.79
Xclaim 3D 4MB PCI	169.89
Xclaim 3D 8MB PCI	239.10
Xclaim VR 2MB PCI	169.38
Xclaim VR 4MB PCI	239.98



Turbo TV video capture	98.19
Twin Turbo 128M2 2MB PCI	238.63
Twin Turbo 128M4 4MB PCI	397.34
Twin Turbo 128M8 8MB PCI	588.31

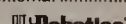
COMMUNICATIONS



TelePort 56K 56Flex external	199.38
TelePort 56K x2 external	176.51
56K bps fax/modem/Ethernet PC Card	349.14
56K bps fax/modem PC Card	249.16
TelePort Speakerphone Edition 33.6	239.50



ACCURA 336 external	137.56
OPTIMA 336 external	179.91
ACCURA 56K external	176.51



Megahertz 28.8 cell-capable CruiseCard	229.00
Megahertz 33.6 Ethernet 10BT	
PC Card w/RJ11	298.52
Megahertz AllPoints wireless PC Card	466.43
Sportster 28.8 PC Card w/DataView	185.56
Sportster 33.6 external	139.07
Sportster Voice 33.6 external	76.62
Sportster 56K x2 fax/modem external	217.99
Courier I-modem	339.78

DATA STORAGE



Hi-Val SounTastic 12X CD external	147.88
Hi-Val SounTastic 12X CD Kit w/software	169.80
Hi-Val SounTastic 16X CD external	189.37
Hi-Val SounTastic 16X CD Kit w/software	219.29
Hi-Val SounTastic	
2X6 CD-Recording system external	439.27



Zip drive 100MB SCSI external	149.95
100MB Zip disk	19.95
100MB Zip disk 3-pack	49.95
Jaz Drive 1GB SCSI-2 external	399.95
1GB Jaz disk	124.95
1GB Jaz disk 3-pack	299.95
Jaz Jet PCI SCSI interface for Power Mac	99.95



1.2GB Quantum Ultra SCSI-3 internal	249.00
2.1GB Quantum ST Ultra SCSI-3 internal	339.00
3.2GB Quantum ST Ultra SCSI-3 internal	389.00
4.3GB Quantum ST Ultra SCSI-3 internal	459.00
9.1GB Quantum Ultra SCSI-3 internal	1149.00
1.2GB Apple drive Ultra SCSI-3 external	349.00
2GB Apple drive Ultra SCSI-3 external	469.00
3GB Apple drive Ultra SCSI-3 external	539.00
4GB Apple drive Ultra SCSI-3 external	589.00

Quantum

1.6GB Fireball ST Ultra-ATA	159.87
2.1GB Fireball ST Ultra-ATA	198.87
3.2GB Fireball ST Ultra-ATA	235.52
4.3GB Fireball ST Ultra-ATA	279.32
6.4GB Fireball ST Ultra-ATA	384.93

INPUT DEVICES

ALPS

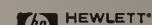
Portable GlidePoint	43.38
Desktop GlidePoint	69.84
GlidePoint Keypad	115.18
GlidePoint Keyboard	109.61



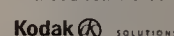
QuickCam digital video camera	99.27
Color QuickCam digital video camera	199.53

EPSON®

PhotoPC digital camera	349.00
PhotoPC 500 digital camera	399.00
Action Scanning System II	279.88
ES-1000C color flatbed scanner	296.90
Expression 636 Executive scanner	799.00
Expression 636 Artist scanner	999.00
Expression 636 Professional scanner	1399.00



HP ScanJet 4c flatbed scanner	297.08
-------------------------------	--------



DC20 digital camera	199.00
DC25 digital camera	299.00
DC50 digital camera w/Zoom lens	499.00
DC120 digital camera w/Zoom lens	799.00

MICROTEK

ScanMaker V300 scanner	139.41
Color PageWiz personal scanner	158.21
ScanMaker E3 scanner	199.93
ScanMaker E6 Standard scanner	289.47
ScanMaker E6 Professional scanner	529.97

Nikon

Coolpix 300 digital camera	674.04
AX-210 ScanTouch flatbed scanner	579.46
LS-20 Super CoolScan II	884.02
Super CoolScan film scanner	1759.31

UMAX®

Astra 600S flatbed scanner	169.00
Astra 1200S flatbed scanner	
w/full Adobe PhotoDeluxe	379.00
Astra 1200S flatbed scanner	
w/full Adobe Photoshop	536.75
PowerLook II	1395.00

PRINTERS



LaserWriter 4/600 PS	819.71
LaserWriter 16/600 PS	1799.52
Color LaserWriter 12/660 PS	5706.86
LaserWriter 12/640 PS	1557.59
Color StyleWriter 4100	234.79
Color StyleWriter 4500	329.18
Color StyleWriter 6500	465.51

EPSON®

Stylus Color 600	299.00
Stylus Color 800	399.00
Stylus Color 1520	799.00
Stylus Color 3000	1999.00
Stylus Photo	499.00



HP DeskJet 340 portable ink jet printer	298.90
HP DeskJet 870Cxi printer	399.00
HP DeskJet 1600Cxi printer	1969.33
HP LaserJet 5M printer	1617.24
HP LaserJet 6MP printer	879.85

800-509-4239

www.cdw.com

© 1997 CDW Computer Centers, Inc.
200 N. Milwaukee Avenue, Vernon Hills, IL 60061 MW3276B 11/97

Visit **CDW®** on the Internet for information
on more than 12,000 products

a rare sales tool.
it's called **objectivity.**

Robotics

Sportster 56K Faxmodem

■ Includes: Sportster 56K faxmodem, RJ-11 phone cord, AC adapter, cable, U.S. Robotics Connections™ CD-ROM with fax and communication software, Internet access software and more than thirty software programs and special offers



\$167.99* CDW 81425

SONY

Multiscan 300sf Trinitron Graphic Display

20" color monitor
■ 20" Super Fine Pitch™ Trinitron CRT, 19.0" viewable image size
■ 0.30mm aperture grille pitch
■ Maximum resolution: 1280 x 1024 at 75Hz
■ 3-years parts and labor, 2-years CRT warranty



\$1385.92 CDW 78755

MOTOROLA

new!

StarMax Pro Series



■ 233MHz PowerPC 750 processor
■ 32MB EDO RAM, expandable to 1GB
■ 2GB Ultra SCSI hard drive
■ 24X SCSI CD-ROM drive
■ 100MB Zip drive
■ 10BASE-T Ethernet controller
■ ATI Rage II+ 3D card with 4MB VRAM

Monitor sold separately

As low as! \$3895.00 CDW 94472

*After \$50 mail-in manufacturer rebate. Offer valid through 1/17/98.

CDW® CARRIES MORE THAN 20,000 PRODUCTS! IF YOU DON'T SEE IT, CALL!

SOFTWARE

Adobe

Acrobat V3.0 CD	179.20
After Effects V3.1 CD	609.05
Illustrator V7.0 CD	365.52
Illustrator V7.0 competitive upg CD	129.66
Illustrator V7.0 version upg CD	116.30
PageMaker V6.5 CD	549.29
PageMaker V6.5 competitive upg CD	178.17
PageMaker V6.5 version upg CD	89.87
PageMill V2.0 CD	95.32
PageMill V2.0 version upg CD	45.30
Persuasion V4.0 CD	239.90
Persuasion V4.0 upg CD	115.72
PhotoDeluxe CD	47.67
Photoshop V4.0 CD	549.29
Photoshop V4.0 version upg CD	159.58
Premiere V4.2 CD	489.23
Premiere V4.2 upg CD	129.65
Type Manager Deluxe V4.0 CD	62.37
Type Reunion Deluxe V2.0	39.30

Apple

Apple At Ease V3.0	29.25
Apple Mac OS 7.6 w/Internet Connection Kit CD	94.76
Apple Remote Access Client V2.1	48.31
Apple Remote Access Personal Server V2.1	89.78

new! **Virtual PC For Power Macintosh**

Windows V3.1	\$132.76 CDW 91307
Windows 95	\$134.76 CDW 91306

care

OmniForm V2.0	129.33
OmniPage Direct V2.0	57.64
OmniPage Pro V7.0 CD	419.48
OmniPage Pro V7.0 upg CD	115.10

CGI

Conflict Catcher V4.0	59.01
-----------------------	-------

CLARIS

Apple Remote Access V3.0 client	52.29
Apple Remote Access V3.0 server	115.49
Claridraw V1.0	179.75
Clarismap V2.0	79.00
Clarismap V4.0 version/competitive upg	62.41
Emailer V2.0	42.94
FileMaker Pro V3.0	177.27
FileMaker Pro V3.0 server	889.09
FileMaker Pro V3.0 server upg	276.60
FileMaker Pro V3.0 upg	89.66
Home Page V2.0 CD	86.99
Mac OS 8 CD	94.47
Mac OS 8 upg CD	66.96
Organizer V2.0	63.20

Connectix

RAM Doubler 2	53.80
Speed Doubler 2	53.91
VideoPhone V2.0 (software only)	54.66
Virtual PC CD	134.76

SOFTWARE

COREL

Corel Gallery V1.0 CD	19.80
Corel Gallery V2.0 CD	34.96
Corel Mega Gallery CD	62.09
Corel Print House CD	28.88
Corel Stock Photo Library 1 CD	865.75
Corel Stock Photo Library 2 CD	869.80
Corel Stock Photo Library 3 CD	886.75
Corel Super Ten Select Photos CD	35.88
Corel WEB.GALLERY CD	61.81
Corel WordPerfect V3.5 CD	155.92
Corel WordPerfect V3.5 upg CD	79.82
CorelDRAW 6 Suite CD	365.52
CorelDRAW 6 Suite upg CD	135.23

DELORME

Phone Search USA V3.0	28.60
Street Atlas USA V4.0	38.91
Street Atlas USA V4.0 and Phone Search USA V3.0 value pack	52.88
Tripmate	144.57

EQUILIBRIUM

DeBabelizer Lite V1.1	64.00
DeBabelizer Toolbox V1.6	229.54
DeBabelizer Toolbox V1.6 5-user	929.50

Extensis

Cyberpress V1.0	129.21
Fetch V1.5	89.92
Intelligence V3.0 CD	89.78
MaskPro V1.0 CD	269.45
Page Tools V2.0	89.70
PhotoTools V1.1 CD	89.22
Portfolio	89.78
OX-Tools V2.0 CD	88.04
VectorTools V2.0 CD	89.64

Mac OS 8 **CLARIS**

Upgrade CD	\$66.96 CDW 91264
CD	\$94.47 CDW 93572

FWB

CD-ROM ToolKit V2.0	48.24
Hard Disk ToolKit V2.01	48.66

INSIGNIA SOLUTIONS

SoftWindows 95 V4.0 CD	174.59
SoftWindows for Performance	115.50
SoftWindows V3.0 CD	128.96

Intuit

QuickBooks Pro V4.0	179.58
QuickBooks V4.0	109.62
Quicken Deluxe V7.0 CD	59.01
Quicken V7.0	39.10

SOFTWARE

macromedia

Authorware 4 CD	2048.29
Authorware 4 Interactive Studio CD	3065.72
Director 6 upg CD	385.35
Director Multimedia Studio 6 CD	929.66
Director Multimedia Studio 6 upg CD	479.57
Flash 2 CD	185.78
FreeHand 7 CD	379.42
FreeHand 7 competitive upg CD	139.17
FreeHand 7 upg CD	138.97
FreeHand Graphics Studio 7 CD	459.08
FreeHand Graphics Studio 7 competitive upg CD	229.00
FreeHand Graphics Studio 7 upg CD	184.65
SoundEdit 16 V2.0 CD	259.13
SoundEdit 16 V2.0 plus DECK II CD	339.58

MetaCreations

Bryce 2 Accessory Kit CD	47.95
Bryce 2 CD	179.00
Dabbler V2.0 CD	39.97
Detailer CD	276.10
Expression CD	127.27
Kai's Photo Soap CD	42.18

Extensis **Mask Pro V1.0**

\$269.45 CDW 88748

Kai's Power Goo CD	49.95
Kai's Power Tools 3 CD	129.00
KPT Actions Accessory Kit CD	42.18
Painter V5.0 CD	259.39
Painter V5.0 upg CD	89.26
Poser V2.0 CD	119.79
Poser V2.0 upg CD	62.22
Ray Dream Designer V4.1	89.36
Ray Dream Studio V5.0 CD	259.86
Ray Dream Studio V5.0 upg CD	89.08
Infini-D V4.0 CD	499.14

METROWERKS

CodeWarrior Discover Programming	64.69
CodeWarrior for BeOS	119.78
CodeWarrior for PalmPilot	289.30
CodeWarrior Latitude	328.71
CodeWarrior Professional CD	489.10

Microsoft

Arcade V1.0	28.18
Bookshelf 98 CD	45.99
Cinemania 97 CD	29.03
Encarta Deluxe 97 CD	67.18
Excel V5.0	298.83
Excel V5.0 upg	115.37
Flight Simulator V4.0	39.51
FrontPage V1.0 CD	134.24
Office V4.2.1 Small Business CD	449.76
Office V4.2.1 Small Business upg CD	269.77
PowerPoint V4.0 upg	115.72
Project V4.0	424.45
Project V4.0 upg	136.24
Visual FoxPro V3.0 CD	445.46
Visual FoxPro V3.0 upg CD	267.42
Word V6.0.1	298.83
Word V6.0.1 version upg	115.71
Works V4.0	43.92

SOFTWARE

ProFi

Select Phone Deluxe 97 CD	62.41
Select Phone 97 CD	43.22

new! **CLARIS** **FileMaker Pro V4.0 For Macintosh**

\$219.71 CDW 92031

QUARK

Quarklmmmedia V1.0 CD	669.96
QuarkXPress V3.32 CD	659.29

STRATA

Media Paint V1.1	406.58
Studio Pro V1.75	856.86
Vision 3D V4.0	58.67

SYMANTEC

ACT! V1.0 for Newton	87.81
ACT! V2.5 upg	46.18
ACT! V2.8	147.63
Norton Disklock V4.0	71.85
Norton Utilities V3.5 CD	92.93
SAM AntiVirus V4.5	63.87
Suitcase V3.0	63.87

CDW® DIRECTORY

PC sales	800-650-4239
Mac sales	800-509-4239
Corporate sales	800-280-4239
Corporate software sales	800-294-4239
Government and Education sales	800-615-4239

CDW® TELEPHONE HOURS

Sales
Monday-Friday 7 a.m.-9 p.m. CT
Saturday 9 a.m.-5 p.m. CT

Tech Support for Customers
Monday-Friday 7 a.m.-9 p.m. CT
Saturday 9 a.m.-5 p.m. CT

BUY WITH CONFIDENCE
CDW® IS A NASDAQ TRADED COMPANY
TICKER SYMBOL CDWC D & B rated 5A1 Duns 10-762-7952

VISA **MasterCard** **DISCOVER**

Credit card charges are not submitted until time of shipment. For your protection, we ship only to your credit card's verified billing address. Freight is calculated as the carrier's actual freight charge plus insurance and packaging material. The cost of insurance is 0.35% (0.0035) of the order total. Packaging materials will not exceed \$4.00 for single package shipments or \$6.00 for multi-package shipments. Before returning any product, you must obtain an RMA number. Non-defective returns are subject to a restocking fee. Software, chips and other electronic components are not returnable. Allow 10 business days for shipping when paying by personal check. All pricing subject to change. For all prices, products and offers, CDW reserves the right to make adjustments due to changing market conditions, product discontinuation, manufacturer price changes, errors in advertisements or other extenuating circumstances. All trademarks and registered trademarks are the sole property of their respective owners.

COMPUTER DISCOUNT WAREHOUSE™

THE STORAGE LEADER!

HARD DRIVES



Quantum
2.1GB
128K CACHE
5400 RPM
Internal
\$229



Quantum
ATLAS II 4.5GB
9.1GB
10,000 RPM
Internal
\$699

Quantum Stratus drives carry a 3 Year Warranty
Quantum Atlas drives carry a 5 Year Warranty

Description	Model	Access	RPM	Int	Ext
2.1GB Stratus	QM32160STS	10ms	5400	\$229	\$279
2.2GB Viking	QM32275VKS	8ms	7200	\$399	\$449
3.2GB Stratus	QM33240STS	10ms	5400	\$319	\$369
4.3GB Stratus	QM34320STS	10ms	5400	\$359	\$409
4.5GB Viking	QM34550VKS	8ms	7200	\$629	\$679
4.5GB Atlas II	QM34550ALS	8ms	7200	\$699	\$749
6.4GB Stratus	QM36480STS	10ms	5400	\$489	\$539
9.1GB Atlas II	QM39100ALS	8ms	7200	\$1079	\$1129

Fast & Wide Drives

2.2GB Viking	QM32275VKS	8ms	7200	\$419	\$499
4.5GB Viking	QM34550VKS	8ms	7200	\$639	\$719
4.5GB Atlas II	QM34550ALW	8ms	7200	\$749	\$829
9.1GB Atlas II	QM39100ALW	8ms	7200	\$1099	\$1179

IDE Drives

1.6GB Stratus - IDE	QM31620STA	10ms	4500	\$169	----
2.1GB Stratus - IDE	QM32160STA	10ms	4500	\$199	----
3.2GB Stratus - IDE	QM33240STA	10ms	4500	\$239	----
4.3GB Stratus - IDE	QM34320STA	10ms	4500	\$289	----
6.4GB Stratus - IDE	QM36480STA	10ms	4500	\$389	----

Seagate

Seagate drives carry a 5 Year Warranty

Description	Model	Access	RPM	Int	Ext
2.2GB Barracuda 4XL	ST30072N	8ms	7200	\$519	\$569
4.5GB Barracuda 4XL	ST34572N	8ms	7200	\$749	\$799
4.5GB Cheetah	ST34501N	8ms	10000	\$849	\$899
9.1GB Barracuda 9	ST19171N	8ms	7200	\$1129	\$1179
9.1GB Cheetah	ST19101N	8ms	10000	\$1299	\$1349
23.4GB Elite 23	ST423451N	8ms	5400	\$2299	\$2399

Fast & Wide Drives

2.2GB Barracuda 4XL	ST32272W	8ms	7200	\$569	\$649
4.5GB Barracuda 4XL	ST34572W	8ms	7200	\$799	\$879
4.5GB Cheetah	ST34501W	8ms	10000	\$899	\$979
9.1GB Barracuda 9	ST19171W	8ms	7200	\$1199	\$1279
9.1GB Cheetah	ST19101W	8ms	10000	\$1349	\$1429
23.4GB Elite 23	ST423451W	8ms	5400	\$2399	\$2499

THE CLUBMAC PACKAGE ClubMac drives are preformatted and thoroughly tested. ClubMac drives include a 30-Day Money Back Guarantee, Charismatic Anubis Formatting Utility software, user's guide, brackets (wide drives include internal ribbon cable), 25/50-pin SCSI cable and power cord for external drives (wide drives include 68/68 pin SCSI cable).

MEMORY

72pin SIMMS

4MB\$22 8MB\$34
16MB\$65 32MB\$129

168pin DIMMS

8MB\$42 16MB\$75
32MB\$149 64MB\$299

EDO DIMMS

16MB 5V\$79 32MB 5V\$149
16MB 3.3V\$99 32MB 3.3V\$199

30pin SIMMS

4MB 4 x 8 SIMMS\$29

POWERBOOK MEMORY 3400 SERIES

16MB\$125 32MB\$195
64MB\$499 128MB\$925

1400 SERIES

16MB\$129 32MB\$195

Video RAM

2MB VRAM for ATI XClaim GA\$85
4MB SGRAM 4400/Starmax\$89
1MB VRAM 7200 - 8500\$32

Memory prices fluctuate frequently, please call for latest prices.

Source Code 691197

ClubMac

ORDER 24 HOURS A DAY • 7 DAYS A WEEK

1-800-260-8549

Order On-Line @ <http://www.club-mac.com>

CLUBMAC CD & CD RECORDABLE



ClubMac
3600KB/sec data transfer
90ms avg access time
Caddy-less design
\$199
24X



ClubMac
4X/6X CD Recorder
Your Choice
DiscWrite
Toast 3.0
\$649

CLUBMAC CD-ROM READERS

12X 140ms 1800k/sec.....	\$149
24X 90ms 3600k/sec.....	\$199

THE CLUBMAC PACKAGE
ClubMac CD-ROM & CD Recorders are thoroughly tested. CD-ROM & CD Recorders include a 30-Day Money Back Guarantee. Charismatic CD AutoCache utility software, user's guide, 25/50-pin SCSI cable, terminator, and power cord.

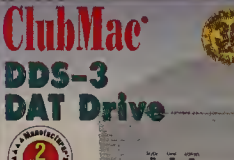


Verbatim
CD-R Media
\$4.99 each
Get 10 For \$39.99



syJet 1.5 GB
\$399
Buy a syJet before Oct 27 1997 and mail-in for a Free syJet cartridge - \$125 Value

TAPE BACK-UP REMOVABLE



ClubMac
DDS-3 DAT Drive
\$1199

REMOVABLE DRIVES

SyQuest SyJet 1.5GB 3.5".....\$399
ClubMac SyQuest 200MB 5.25".....\$349
SyQuest EZ Flyer 230MB 3.5".....\$149
Nomai 750MB 3.5".....\$299

GENUINE SYQUEST REMOVABLE MEDIA

Media	Qty 1	Qty 10	Qty
44MB	\$38ea	\$37.50ea	\$37ea
88MB	\$38ea	\$37.50ea	\$37ea
200MB	\$59ea	\$58ea	\$57ea
270MB	\$43ea	\$42ea	\$41ea
EZ230MB	\$27ea	\$26.50ea	\$26ea
1.5GB SyJet	\$124ea	\$99ea	\$89ea



Zip Drive Solutions
\$139.95
Includes One Free Cartridge
100MB



Jaz Drive Solutions
\$399.95
Includes One Free Cartridge
1.0GB

IOMEGA ZIP DRIVES

Zip Drive w/one cartridge	\$139.95
Zip Giga Color cartridges (2 Red, 2 Yellow, 2 Blue, 2 Green, 2 Gray) ...	\$149.95
Zip Bundle - Zip drive, 11 Disks, Case, 2 Caddy's ..	\$279
Zip Drive Internal - all PowerMacs	\$159
Zip Drive Internal - all PowerComputing/Umax ..	\$139

IOMEGA JAZ AND ZIP MEDIA



GET MORE STORAGE FOR YOUR STUFF!!!



Format	Part#	Qty 1-2	Qty 3-9	Qty 10+
MAC	1040 1006	\$16.95	\$14.95	\$12.95
PC	1040 1009	\$16.95	\$14.95	\$12.95

Format	Part#	Qty 1-2	Qty 3-5	Qty 6+
MAC	1040 1015	\$124.95	\$99.95	\$89.95
PC	1040 1037	\$124.95	\$99.95	\$89.95

WARRANTIES: All items manufactured by ClubMac are returned to ClubMac for warranty repair. All other items carry manufacturer's warranty. **MONEY BACK GUARANTEE:** All products manufactured by ClubMac carry a 30-day money back guarantee. ClubMac extends all other manufacturers' return policies to its customers. Non-ClubMac products carry 30-day money back guarantee when specified. **RETURNS:** Call for RMA number! Any product is returned WITHOUT an RMA number will be refused. **ALL PRODUCTS INFORMATION AND PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.** NOT RESPONSIBLE FOR TYPOGRAPHICAL ERRORS.

PowerMac 7300 **Starting at \$2099***

- 180 or 200MHz 604e
- 16 or 32MB RAM
- 2GB HD
- 12X CD

Authorized Apple Reseller

PowerMac 7300 180/180MHz 604e 180MHz, 2GB HD, 12X CD... **\$2099***

PowerMac 7300 200/200MHz 604e 200MHz, 2GB HD, 12X CD... **\$2399***

*Monitor sold separately

PowerBook 1400 **133MHz**

- 11.3" Dual Scan
- 133MHz 603e
- 16MB RAM
- 1.3GB hard drive
- 8X CD ROM

\$2499

UMAX SUPERMAC C600x

- 240MHz 603e
- CacheDoubler
- 32MB RAM
- 12X CD
- 3GB HD
- 33.6 Modem
- Ethernet

\$1995*

Monitor sold separately

SuperMac 600x 603e 280MHz, 32MB, 4GB HD, 12X CD, 16MB VRAM, CacheDoubler, 33.6 Modem, \$1200 Software... **\$2395***

SuperMac 600 603e 200MHz, 16MB RAM, 2.1GB HD, 16MB VRAM, 8X CD, 33.6 Modem, \$1200 Software Bundle... **\$1295***

SuperMac 600 603e 240MHz, 24MB RAM, 2.1GB HD, 16MB VRAM, 8X CD, 33.6 Modem, \$1200 Software Bundle... **\$1495***

SuperMac 600 603e 200MHz, 32MB RAM, 2.1GB HD, 16MB VRAM, 12X CD, 33.6 Modem, \$1200 in software... **\$1695***

MESSAGEPAD

Newton 120 **\$249** **LOWEST PRICE EVER!**

ORDER TODAY! LIMITED QUANTITIES AVAILABLE

Apple Newton MessagePad 120... **\$249**

Apple Newton MessagePad 2000... **\$949**

Apple Newton MessagePad 2000 Bundle... **\$1099**

MONITORS

SONY MultiScan 200SX

15.9" Viewable image

25mm Aperture

Grille Pitch

\$625

ONY

Ultiscan 100SX 15", 1024x768... **\$339**

Ultiscan 100SF 15", 1024x768 on screen display... **\$389**

Ultiscan 200SX 17", 1024x768... **\$625**

Ultiscan 200SF 17", 1152x870... **\$715**

Ultiscan 300SFT 20", 1280x1024... **\$1479**

PPL

Multiple Scan 15AV 15", 1024x768... **\$397**

AppleVision 850 20", 1600x1200... **\$1849**

AppleVision 850 AV 20", 1600x1200... **\$1999**

ADIUS

essView 17SR 17", 1600x1200... **\$1749**

essView 21SR 21", 1600x1200... **\$3199**

ecisionView 21", 1600x1200... **\$1749**

ASTEROPS

uperScan MC7515 19", 1600x1200... **\$1099**

uperScan MC6315 17", 1600x1200... **\$699**

uperScan MC801HR 21", 1600x1200... **\$1879**

EC

500 15", 1024x768 .28 dot pitch... **\$369**

700 17", 1024x768 .28 dot pitch... **\$757**

1150 21", 1360x1024 .28 dot pitch... **\$1739**

IEWSONIC

T775, 17" 1280x1024, .25 dot pitch... **\$689**

810, 21" 1600x1200, .25 dot pitch... **\$1499**

815, 21" 1800x1440, .25 dot pitch... **\$1639**

ORDER TODAY!

200MHz Under \$1,000 UMAX®

SUPERMAC C500LT

SuperMac C500e 200 603e, 200MHz, 16MB RAM, 2.0GB HD, 6X CD, Ethernet, \$1200 Bundled Software... **\$1095***

SuperMac C500i 200MHz 603e, 16MB RAM, 2.0GB HD, 16X CD, 33.6 Modem... **\$1095***

SuperMac J700 180 604e, 180MHz, 24MB RAM, 2.1GB HD, 8X CD, 2MB VRAM, 33.6 Modem... **\$1995***

*Monitor sold separately

SuperMac C500 **\$995***

- 200MHz 603e
- 16MB RAM
- 8X CD ROM
- 2GB IDE HD
- 1MB VRAM

*Monitor sold separately

PowerComputing PowerCenterPro **Exclusive 60MHz Bus** **Starting at \$2195***

- 240 or 280MHz PowerPC 604e Processor
- Exclusive 60MHz Bus
- 3D Graphics acceleration
- 1MB Level 2 Cache
- Upgradeable CPU daughter Card
- \$1000 software
- 32MB RAM
- 2GB Hard Drive
- 16X CD ROM
- \$1000 software

*Monitor sold separately. MiniTower models available for \$100 more

PowerCenter Pro 240LP 604e, 240MHz, 32MB RAM, 2.0GB HD, 16X CD... **\$2595***

PowerCenter Pro210LP 604e, 210MHz, 32MB RAM, 2.0GB HD, 16X CD... **\$2195***

PowerBase240LP 603e, 240MHz, 16MB RAM, 2.0GB HD, 12X CD, 2MB VRAM... **\$1549***

PowerMac 9600

- 350MHz 604e
- 64MB RAM
- 4GB hard drive
- 24X CD ROM
- Zip Drive

\$5399*

*Monitor sold separately

PowerMac 8600 Mach 5 604e, 300MHz, 32MB RAM, 4.0GB HD, 24X CD, 24bit Video In & Out, Zip Drive... **\$3699***

PowerMac 9600 Mach 5 604e, 300MHz, 64MB RAM, 4.0GB HD, 24X CD, Zip Drive... **\$4599***

PowerMac 9600 Mach 5 604e, 350MHz, 64MB RAM, 4.0GB HD, 24X CD, Zip Drive... **\$5399***

GRAPHIC CARDS

IX MICRO Twin Turbo 128M 8MB **\$499**

ATI

XClaim VR™ 4MB PCI graphics card... **\$244.25**

XClaim TV™ Tuner... **\$82.00**

Nexus GA 8MB 2&3D card, upgradable to 16MB... **\$529.00**

IX MICRO (Formerly Integrated Micro Solutions)

Twin Turbo 128M 2MB PCI... **\$219**

Twin Turbo 128M 4MB PCI... **\$299**

Twin Turbo 128M 8MB PCI... **\$499**

IMS Turbo TV... **\$109**

RADIUS

ThunderPower 30/1600 (PCI)... **\$549**

ThunderPower 30/1920 (PCI)... **\$799**

Thunder 3D (PCI)... **\$1999**

VideoVision Studio 2.5.1 (NuBus)... **\$999**

VideoVision Studio PCI 2.0 ML... **\$2399**

SCANNERS

VISIONEER PaperPort Strobe **\$279**

COLOR

V029 1017

AGFA *Price after \$20 mail-in rebate

Agfa SnapScan for MAC 600DPI 24-Bit... **\$299**

Agfa Arcus II Desktop Pro Scanner... **\$1645**

UMAX

UMAX Astra 600S... **\$199**

UMAX Powerlook II w/transparency adapter... **\$1357**

EPSON

Epson Expression 636 Executive Model... **\$799**

Epson Expression 636 Artist Model... **\$999**

Epson Expression 636 Professional Model... **\$1399**

Microtek

Microtek Scanmaker III w/trans adapter... **\$1399**

Microtek Scanmaker V300... **\$149**

PRINTERS

EPSON Stylus Color 600 **\$299**

E047 1034

EPSON

Epson Stylus Color 600... **\$299**

Epson Stylus Color 800... **\$399**

Epson Stylus Photo... **\$499**

Epson Stylus Color 3000... **\$1999**

APPLE

Apple Stylewriter 4100 inkjet... **\$239**

Apple Stylewriter 4500 inkjet... **\$339**

Apple Stylewriter 6500 inkjet... **\$469**

HEWLETT PACKARD

HP LaserJet 6MP... **\$885**

HP DeskJet 870CXI... **\$498**

MODEMS

GLOBAL VILLAGE

TelePort 33.6kbps Internet Edition... **\$99***

Teleport 56K Fax/modem... **\$199**

Teleport 56K Fax/modem w/X2 technology... **\$199**

BEST DATA *Price after \$50 mail-in rebate, ends 9/30/97

33.6FLXMAC Fax/Modem... **\$49.99***

56KMAC Fax/Modem... **\$129.99**

*Price after \$20 mail-in rebate, ends 9/30/97

MEGAHERTZ

Cruise Card, 33.6 w/ X-Jack, Cellular Ready... **\$226**

U.S. ROBOTICS

56k Sportster FAX/Modem w/X2 Technology **\$167.99***

*Price after \$70 mail-in rebate

SOFTWARE

Mac OS 8 **It's Here!** **\$65.99**

Upgrade for Mac OS 7

ADOBE

Illustrator 7.0 full version... **\$374.95**

Illustrator 7.0 CD upgrade... **\$119.95**

Photoshop 4.0 full version... **\$539.95**

Photoshop 4.0 upgrade... **\$155.95**

PageMaker 6.5 full version Mac/PMac... **\$539.95**

PageMaker 6.5 upgrade CD... **\$89.95**

APPLE

Mac OS 8 upgrade... **\$65.99**

Mac OS 8 CD... **\$94.99**

Apple Remote Access Multiport Server... **\$699.00**

CLARIS

FileMaker Pro 3.0... **\$181.95**

FileMaker Pro 3.0 competitive upgrade... **\$89.95**

MACROMEDIA

FreeHand 7 upgrade... **\$138.00**

FreeHand 7... **\$374.95**

Director 6 Multimedia Studio upgrade... **\$499.00**

MICROSOFT

Office Standard 4.2.1 CD or Disk... **\$449.95**

Office Standard 4.2.1 upgrade CD or Disk... **\$265.95**

SYMANTEC

Norton Utilities 3.5 Upgrade... **\$49.95**

SAM 4.5... **\$43.95***

Suitcase 3.0... **\$64.85**

*Price after \$20 mail-in rebate

Contacting ClubMac

Sales and Customer Service (800) 260-8549

24 Hours a Day, 7 Days a Week

Inquiries and International Sales (714) 768-8130

M - F 5am - 9pm PST

Corporate/Educational Sales (800) 258-2621

M - F 5am - 5pm PST

Technical Support (800) 854-6227

M - F 5am - 9pm PST

24-Hour Fax (714) 768-9354

E-Mail: ClubMac Sales... cmsales@club-mac.com

Customer Service... custsvc@club-mac.com

Technical Support... techsup@club-mac.com

Mail: ClubMac... 7 Hammond, Irvine, CA 92618

ORDER 24 HOURS A DAY • 7 DAYS A WEEK

1-800-260-8549

Order On-Line @ <http://www.club-mac.com>

ClubMac®

1-800-260-8549

Exclusive Blowouts from



Apple PowerBooks
AS LOW AS
\$2499!*

PowerBook 1400cs/133MHz • CPU 0744
While supplies last

**12X
CD-ROM
DRIVE!**

PowerBook 3400c/180MHz/
16MB RAM/1.3GB Hard Drive/
12x CD-ROM shown.

PowerBook 3400c/180MHz
16MB RAM/1.3 GB Hard Drive (does not include CD-ROM Drive, modem or Ethernet connection)
CPU 0577 Was \$3799 **\$3499**

PowerBook 3400c/180MHz
16MB RAM/1.3 GB Hard Drive/33.6 modem/10Base-T Ethernet
CPU 0578 w/6x CD-ROM Was \$4299 **\$3799**

CPU 0671w/12x CD-ROM **\$3999**

PowerBook 3400c/200MHz
16MB RAM/2.0 GB Hard Drive/33.6 modem/10Base-T Ethernet
CPU 0579 w/6x CD-ROM Was \$4799 **\$4299**

CPU 0670 w/12x CD-ROM **\$4499**

PowerBook 3400c/240MHz
16MB RAM/3.0 GB Hard Drive/33.6 modem/10Base-T Ethernet
CPU 0610 w/12x CD-ROM Was \$5999 **\$5499**

PowerBook 3400 Memory Upgrades
16MB CHP0437 **\$249⁹⁵**
32MB CHP0439 **\$399⁹⁵**

THE SMALLEST, LIGHTEST, POWERBOOK EVER!
PowerBook 2400c 16MB, 1.3GB HDD, 10.4" Active Matrix display
CPU 0713 **\$3499**

PowerBook 1400cs/133MHz/16MB RAM/1.3GB HD/8X CD/L2/11.3" Dual-Scan Display
CPU 0744 **\$2499***

PowerBook 1400c/133MHz/16MB RAM/1.0GB HD/6X CD/11.3" Active Matrix Display
CPU 0568 Was \$2499 **\$2799**

PowerBook 1400c/133MHz/16MB RAM/1.3GB HD/8X CD/L2/11.3" Active Matrix Display
CPU 0743 **\$2999**

PowerBook 1400c/166MHz/16MB RAM/2.0GB HD/8X CD/L2/11.3" Active Matrix Display
CPU 0745 **\$3499**

*While supplies last.

PowerBook 3400:

- 180, 200 or 240MHz PowerPC 603e processor
- 16MB of RAM (expandable to 144MB)
- Internal 1.3, 2, or 3GB hard disk drive
- Internal 12X CD-ROM or 6X CD-ROM available
- 256K Level-2 cache



Apple's fastest Power Macs ever!

Up to **350MHz**

- 200-350MHz PowerPC 604e processor
- 32MB RAM, expandable to 768MB
- 2.0-4.0GB, AV-Capable fast SCSI internal hard drive

New!



Zip Drive Built-in



Monitor sold separately.

Power Macintosh 8600/200MHz
32MB/2GB/12XCD/Iomega Zip Drive
CPU 0573 **\$2999**

Power Macintosh 8600/300MHz
32MB/4GB/24XCD/Iomega Zip Drive
CPU 0784 **\$3699**

Power Macintosh 9600/233MHz
32MB/4GB/12XCD Drive
CPU 0613 **\$3499**

Power Macintosh 9600/300MHz
64MB/4GB/24XCD/Iomega Zip Drive
CPU 0785 **\$4599**

Power Macintosh 9600/350MHz
64MB/4GB/24XCD/Iomega Zip Drive
CPU 0786 **\$5399**

*Zip Drive not included on 9600/233MHz model.

Power Mac 7300

- PowerPC 604e processor
- 16 or 32MB of RAM, expandable to 512MB

- 2GB fast SCSI Internal HD
- Internal 12X CD-ROM
- Built-in 10 Base-T and AAUI Ethernet connections
- 2MB VRAM



Monitor sold separately.

Power Macintosh 7300/180MHz
16MB/2GB/12XCD CPU 0571 Was \$2299 **\$2099**

Power Macintosh 7300/200MHz
32MB/2GB/12XCD CPU 0572 Was \$2699 **\$2399**

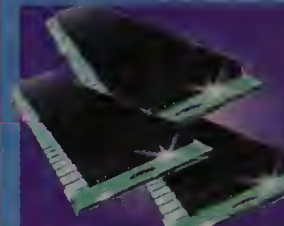
Power Macintosh 7300/180MHz PC Compatible
180MHz Power PC 604e processor w/32MB RAM and 166MHz Pentium Processor with 16MB RAM/2GB HD/12XCD
CPU 0676 **\$3199**

Memory Upgrades for Power MAC 7300/8600/9600
16MB CHP 0383 **\$179⁹⁵**
32MB CHP 0382 **\$249⁹⁵**
64MB CHP 0392 **\$599**

LOWEST MEMORY PRICES EVER!

as low as
\$19⁹⁵!

1MB SIMMS
Item #
CHP 0022



ORDER ONLINE! and Get FREE Software!*

www.warehouse.com



Chose one of these software packages when you place an online order with MacWAREHOUSE!
*Limit one per customer.

3 Ways to Order:
1. Phone: 1-800-434-3035
2. FAX: 1-908-905-9279
3. Online: **www.warehouse.com**



1. Our sales staff is ready to take your order 24 hours a day, 7 days a week.
2. We accept the following major credit cards: Visa, MasterCard, Discover Card/NOVUS, AmEx. Your credit card will not be charged until each item is shipped (no surcharge).
3. CT, IL, NJ, and OH residents add applicable sales tax.
4. Overnight delivery just \$3.00 per order up to 3 pounds. For all orders over 3 pounds, shipping is \$1.25 per pound or fraction thereof. (Example:

shipping for a 4 pound order is \$5.00)
5. Place your order for "in-stock" items up to 12:00 midnight(E) (weekdays), and we will ship same day for overnight delivery (barring system failure, etc.).

6. Many of our products come with a 30-Day Money Back Guarantee. All items we sell come with the MacWAREHOUSE 30-Day Guarantee Against Defects.

© Copyright 1997 Micro Warehouse, Inc. MacWAREHOUSE® is a division of Micro Warehouse, Inc. MacWAREHOUSE® and MicroWAREHOUSE® are registered trademarks and Data Comm Warehouse and MacSystems WAREHOUSE are trademarks of Micro Warehouse, Inc. Apple, the Apple logo, Mac and Macintosh are registered trademarks of Apple Computer, Inc. Item availability and price subject to change without notice. We regret that we cannot be responsible for typographical errors. All prices shown in U.S. dollars.



SUPER FAST CD-ROM DRIVES

Plus, get **F/A 18 Hornet 3.0 FREE!** when you buy an 8X or 12X CD-ROM Drive!

as low as
\$129⁹⁵!

For FREE F/A 18 Hornet. Ask for item #AAA 0520
8X CD-ROM Drive-
Item # DRI 2120 \$129.95
12X CD-ROM Drive-
Item # BND 2079 \$199.95

INCLUDES YOUR FIRST DISK!

ZIP DRIVES

only
\$129⁹⁵!

100MB Zip Disks
Ask for MED 0165



1-9 10-19 20+ Item #
\$19.95ea \$16.95ea \$12.99ea RDRI 2126
*Refurbished by the manufacturer to meet original factory specifications



HP LASERJET 5M PRINTER

only
\$1569⁹⁵!

Item #
PR11911

- 12ppm engine with 33MHz RISC processor
- True 600dpi printing with RET and enhanced grayscale
- Genuine Adobe Postscript Level 2 software
- 6MB total and Adobe Memory Booster technology



MacWAREHOUSE!



MacWAREHOUSE EXCLUSIVE!

STARMAX 3000/180

- ★ 180MHz PowerPC 603e Processor
- ★ 16MB RAM (expandable to 160MB)
- ★ 1.2GB Internal Hard Drive
- ★ 8X CD-ROM Drive
- ★ Three PCI Expansion Slots
- ★ Keyboard & mouse included
- ★ 5 year Manufacturer's Warranty

Ask for Item # CPU 0619

\$999!

Includes 28.8 Modem!

While supplies last. Monitor sold separately.

MacWAREHOUSE EXCLUSIVE!

UMAX C500LT/180

Plus, get a bonus Zip Drive*

- ★ 180MHz PowerPC 603e Processor
- ★ 16MB RAM
- ★ 1.2GB Internal Hard Drive
- ★ 8X CD-ROM Drive
- ★ 1MB VRAM
- ★ Two PCI Expansion Slots
- ★ Extended Keyboard & Mouse

\$999!

Ask for Item # BND 2203

*Refurbished Zip drive.

While supplies last. Monitor sold separately.

MacWAREHOUSE EXCLUSIVE!

PowerBase Low Profile 180MHz

- ★ 180MHz PowerPC™ 603e processor!
- ★ 16MB RAM (expandable to 160MB)!
- ★ 1.2GB hard drive!
- ★ 12X CD-ROM drive!
- ★ 2MB VRAM graphics on board!
- ★ ADB keyboard and mouse!
- ★ Three fast PCI expansion slots!

PowerBase Low Profile 180MHz (No Cache/12X CD-ROM)

Item # CPU 0659..... **\$999**

While supplies last. Monitor sold separately.



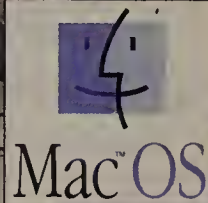
PowerComputing

as low as
\$999!

180MHz!

ONLY \$999!

PowerBase Low Profile 180MHz Item# CPU 0659



12X CD-ROM DRIVE!

NETSCAPE COMMUNICATOR INTERNET ACCESS EDITION

NEW VERSION!

Everything you need to communicate on the Internet!

Only \$29.99!*

Ask for item # COM 0837 (CD-ROM)

*Price reflects publisher's \$30 mail-in upgrade rebate for previous owners. Price before rebate is \$59.95. See coupon inside packaging for details.

UPGRADE TO MAC™ OS 8.0

Only \$69.95!

Get 5 CDs **FREE!**

Ask for item # UPG 0687 (CD-ROM)
Mac OS 8.0 requires 68040 or PowerPC based machine.

When you buy Mac OS 8.0 now! Ask for AAA0546. 5 FREE CDs include Earthlink Internet Access, Marathon, 3000 Mega ClipArt Pack & more... *2.95 shipping & handling applies. Shipped in promotional packaging.

UPGRADE TO FILEMAKER PRO 4.0

Create your own Relational Databases!

Only \$99.95!*

Ask for item # UPG 0722

*Packaging may vary. Proof of ownership required

MacWAREHOUSE®

To order, call toll-free 24 hours a day, 7 days a week

1-800-434-3035

Your #1 Source for Apple Products!

FREE CATALOG SUBSCRIPTION! Check the appropriate box(es) to receive your FREE 1-year catalog subscription(s) and mail this coupon to: 1720 Oak Street, P.O. Box 3013, Lakewood, NJ 08701

Name _____

Address _____

E-Mail _____

City _____

State _____

Zip _____

(Expect to receive your first issue(s) within 4-6 weeks.)

☐ Yes, send me my FREE Power User's Tool Kit. Enclosed is my check for \$2.95 to cover shipping & handling.

☐ MacWAREHOUSE ☐ MicroWAREHOUSE ☐ DataComm WAREHOUSE ☐ MicroSystems WAREHOUSE

☐ For your FREE Canadian Catalog, call toll-free 1-800-603-5139!

MMW7



Circle 150 on reader service card

Special Of The Month

**Techworks
PowerCPU
180Mhz
604e**

\$299

Processor Upgrade card fits into any PowerMac 75/76/85/9500 system!

Media 100 QX

Professional Level

**Digital Video
Capture Card**

\$1969

*Component System \$3795

**IBM
Ultrastar
2XP 3.5"**

9.1GB AV HD

Internal.....799

External899

18GB RAID1699

fast/wide(68-Pin) or narrow (50-Pin)

\$279

**Agfa ePhoto
307 Digital
Camera**

\$279

Agfa SnapScan

AGFA Snapscan 600\$385

AGFA Snapscan 600 Artline...\$519

AGFA StudioStar For Mac.....\$697

AGFA StudioStar For PC.....\$697

Agfa Arcus II Mac/PC.....\$1569

AGFA Arcus II *Solo*.....\$1279

AGFA DuoScan.....\$4199

Miro DC30 PCI

Digital Video Card

\$699

Kensington Orbit

\$51.95

**Magic Yamaha
4x/6x Speed
CD-R Drive**

External \$629

Includes SCSI cable, terminator,
Astarte Toast v3.0.5, 1Pc. media

US Robotics 33.6k

Voice \$59.97*

*after \$20.00 rebate

PowerBook 2400c/180

\$3397

PowerBook 3400c/240

\$5189

Connectix Virtual PC

\$138

Windows 95 or
3.1 Version

XLR8

radius

The one source for all your Macintosh needs.

http://www.blol.com/macworld/ 1-800-990-5792

Prices updated every 30 minutes!

Everyone Needs RAM

All memory purchased from Bottom Line comes with a hassle free lifetime warranty!

DIMMs 168-Pin 5.0/5.5 volt	32MB 168-Pin DIMM 60ns.....\$139
PCI PowerMac, UMAX, Power	64MB 168-Pin DIMM 60ns.....\$279
8MB 168-Pin DIMM 60ns.....\$37	256k L2 Cache DIMM.....\$89
16MB 168-Pin DIMM 60ns.....\$61	512k L2 Cache DIMM.....\$139
32MB 168-Pin DIMM 60ns.....\$117	SIMMs 72-Pin
64MB 168-Pin DIMM 60ns.....\$225	8MB SIMM 60ns.....\$39
512k L2 Cache DIMM.....\$99	16MB SIMM 60ns.....\$59
TW 1MB L2 Cache DIMM.....\$179	32MB SIMM 60ns.....\$117
1MB VRAM DIMM.....\$35	256k L2 Cache SIMM.....\$15.99
DIMMs 168-Pin 3.3 volt	1MB L2 Cache 61/71/8100.....\$189
Starmax, PowerTools, Apple 4400	Other Cache/VRAM
8MB 168-Pin DIMM 60ns.....\$47	6400/6360 512K L2 Cache.....\$139
16MB 168-Pin DIMM 60ns.....\$79	ATI 2MB VRAM Upgrade.....\$89.95

Storage/Back-Up

**Magic Sony
2x/6x Speed
CD-R**

\$449

External Drive Includes SCSI cable, terminator,
Astarte Toast v3.0.5, 1Pc. media

Sony CDR 2x/6x Internal.....\$309

Quantum Fireball 3.2GB.....\$359

Quantum Fireball 6.4GB.....\$579

Quantum Atlas II 4.3GB.....\$796

Seagate Barracuda 4.55GB.....\$851

Seagate Cheetah 4.55GB.....\$899

Seagate Cheetah 9.1GB.....\$1499

Sony Sony DD5-3 SDT-9000.....\$1249

SyQuest SyJet 1.5GB External.....\$389

IBM Ultrastar 2ES 4.3GB F/W.....\$439

Digital Cameras

Kodak DC120

\$759.99

Kodak Digital Science DC-25.....\$358

Kodak Digital Science DC-50.....\$628

Sony D5C-F1 Digital Camera.....\$690

Sony Mavica w/3.5" Storage.....\$489

Sony Mavica w/Zoom.....\$689

Olympus D320L.....\$899

Apple QuickTake 200.....\$599

Modems

USR Sportster 56k X2.....\$144.95*

USR Sportster 36.6 Voice.....\$59.99*

GV Teleport 33.6k.....\$99*

Teleport 56k X2.....\$157.94

Supra Express 56.6k.....\$162.50

PCMCIA Modems

PowerPort Platinum Pro 56.6.....\$379

GV PowerPort 56.6k Modem.....\$259

Viking Netlink 33.6k.....\$129

Viking Netlink 56.6k.....\$199

* http://www.blol.com/rebate

Radius

DOS Cards

Radius Reply PCI 5x86/133Mhz \$659

Radius Reply PCI P133Mhz.....\$999

Radius P166Mhz w/MMX.....\$1179

Displays/PCI Cards

PrecisionView 21" .26mm.....\$1672

PressView 17SR 17".....\$1599

PressView 21SR 21".....\$3199

PowerBook Extras

Podeum Strap-To-Leg.....\$49.95

PB 1400 10BT Ethernet.....\$93.97

PB 1400 8-Bit Video Out.....\$159.95

PB 1400 Battery.....\$124

PB 3400 Battery.....\$174

Kensington Saddlebag.....\$69.99

Acceleration!

**xlr8 MACH
Speed
200Mhz**

\$532

Processor Upgrade
card fits into
75/76/85/9500s

TechWorks PowerCPU 180Mhz \$299

XLR8 MACH Speed 200Mhz.....\$532

XLR8 MACH Speed 225Mhz.....\$679

XLR8 MACH Speed 233Mhz.....\$823

XLR8 MACH Speed 300Mhz.....CALL

MaxPowr 225Mhz 604e.....\$779

MaxPowr Dual 180Mhz-604e.....\$975

MaxPowr Pro + w/512K Cache \$1297

MaxPowr Pro + w/1MB Cache \$2289

Iomega

Iomega Zip

\$149.99

Zip Drive External.....\$149

Zip Drive Internal (Tan Color).....\$149

Zip/Jaz Internal Kits.....\$25

Jaz Drive Internal (Tan Color) \$199

Jaz Drive External.....\$349

Jaz Drive 1GB Carts. Singles.....\$89

Zip Drive 100MB Carts. 10-Pack 119*

* http://www.blol.com/rebate

Monitors

Apple 750AV 17" .26mm.....\$949

Apple 850AV 20" .26mm.....\$1899

NEC M500 15" .25mm.....\$389

Viewsonic OptiQuest Q71 17".....\$488

Viewsonic 17EA w/5speakers.....\$559

Samsung SyncMaster 6NE 17".....\$599

Sony 200sx 17" Monitor.....\$631

Magnavox CM5600 21".....\$1059

Mitsubishi Pro 91TXM 21".....\$1499

Iiyama Visionmaster Pro 21".....\$1459

Iiyama Visionmaster 500 21".....\$1559

PowerBooks/RAM

1400cs 133Mhz 16/1.3/CD.....\$2499

1400c 133Mhz 16/1.3/CD.....\$2799

1400 RAM Modules

Newer Tech Viking

12MB.....\$97 16MB.....\$139

16MB.....\$137 24MB.....\$189

24MB.....\$209 32MB.....\$279

3400c/180 16/1.3/CD.....\$3699

3400c/200 16/2.1/CD.....\$4399

3400 RAM Modules

16MB.....\$109 64MB.....\$489

24MB.....\$199 96MB.....\$759

32MB.....\$209 128MB.....\$859

PowerBook 1400c/166

\$3279

Make sure to ask about our low interest business lease options!

Apple

**PowerMac 9600
604e/350Mhz**

\$5137

- 604e PowerPC 350Mhz!
- 64MB RAM, 1MB Cache
- 24x Speed CD-ROM
- 4GB 5400RPM HD
- IMS 128 8MB VRAM
- Processor Upgradable
- 1-Year Warranty

**PowerMac 7300
604e/180Mhz**

\$1969

- 604e PowerPC 180Mhz!
- 16MB RAM, 256K Cache
- 12x Speed CD-ROM
- 2GB 5400RPM HD
- 2MB VRAM
- Processor Upgradable
- 1-Year Warranty

PowerMac 7300/200Mhz.....2269

**PowerMac 8600
604e/300Mhz**

\$3579

- 604e PowerPC 300Mhz!
- 32MB RAM, 1MB Cache
- 24x Speed CD-ROM
- 4GB 5400RPM HD
- 2MB VRAM
- Processor Upgradable
- 1-Year Warranty

All New Apple Systems:

6500/225 32/3/12X.....\$1649

6500/250 32/4GB/12x Office \$2159

7600/180 DO5 Compatable ..\$2999

6500/275 32/4/12X.....\$2479

6500/300 64/4/12X.....\$2569

4400/200 16/1.2/8X.....\$1299

8600/200 32/2GB 12x/Zip.....\$2689

9600/200 32/4GB 12x/4MB ..\$3157

9600/300 32/4GB/24x.....\$4399

PCI/Nubus Cards

ATI VR PCI

\$249

ATTO Express PCI Fast/Wide.....\$349

Jackhammer PCI Fast/Wide.....\$379

Adaptec 2940UW Fast/Wide.....\$299

Targa 1000 PCI.....\$1899

Targa 2000 PCI.....\$3299

LC/PD5 2MB VRAM 630/LCIII.....\$239

MacPicasso 2MB VRAM NUBUS\$289

Favorite Software

Duke Nukem 3-D *In Stock* \$39.95

Kai's PhotoSoap.....\$43.79

Quark Xpress v3.32.....\$639

Adobe Photoshop v4.0.....\$469

Adobe Illustrator v7.0.....\$389

GoLive CyberStudio v1.1.....\$269

Freehand v7.0 Upgrade.....\$147

M5 Office v4.2.1.....\$489

Symantec Suitecase v3.x.....\$65

Corel Draw v6.0.....\$389

Norton Utilities v3.5.....\$99.99

Keyboards/Mice

TurboMouse Mac/PC.....\$89.95

Mouse-In-A-Box.....\$34.95

DGR Keyboard 105-Key.....\$47.95

Apple Extended Keyboard II.....\$149

POWERtools

**Infiniti 4200
604e/200Mhz**

\$1899

- 604e PowerPC 200Mhz!
- 32MB RAM, 256k Cache
- 16x Speed CD-ROM
- 3.2GB 5400RPM HD
- 2MB VRAM, Kbd. & Mse
- Processor Upgradable
- 1-Year Warranty

Pre-Configured Systems:

3200/200 16/2GB/CD.....\$1306

4200/200 16/2GB/CD.....\$1709

Bare Bones Systems:

4200/200Mhz 604e.....\$1299

3200/200Mhz 603e.....\$899

PowerTools Add Ons:

Sony CD-R 2x/6x w/Toast.....\$329

IBM Ultrastar 4.3GB F/W HD \$499

UMAX
Computer Corporation

**SuperMac S900L
604e/250Mhz**

\$3577

- 604e PPC 250Mhz!
- 32MB RAM, 512K Cache
- 8x Speed CD-ROM
- 2GB 7200 RPM HD
- IMS 128 8MB, Zip
- Processor Upgradable
- 1-Year Warranty

We Offer The Complete Line:

S900L/180 32/2GB/CD.....\$2189

S900L/200 Dual Processor.....\$3192

express direct

Systems and peripherals for the Graphics Professional!

We Specialize in

UMAX



Custom Configured Complete Systems

Complete Power Scanning & Proofing System

Apple PowerMac 9600/350

- Includes:
- Enhanced 604e
 - 64MB RAM/4GB HD/24X CD
 - 1MB L2 cache
 - 4MB IMS Graphics Card, Kbd & Mouse
 - 21" RasterOps SuperScan 21" monitor
 - 36-bit, 3.3 Dmax, 1200dpi scanner
 - Epson Stylus 3000 printer (up to 17" x 22", 1400dpi)
 - ColorTron II Color Calibration System
 - MetaTools KPT & Convolver
 - Adobe Full Photoshop 4.0
 - Extensis Fetch 1.5
 - PTS Training CDs for Photoshop
 - 4yr Onsite Warranty

350 MHz

Includes 4yr Onsite Warranty

Do it In-house & Save!

lease only **\$385/mo.**



We're The Digital Video Experts!

Complete DV System

Includes:

- PowerMac 9600/233MHz with
- 96MB RAM/4GB HD/12X CD
- RasterOps SuperScan MC17s monitor
- Extended keyboard & mouse
- Media 100 qx Component with Adobe Premiere 4.2
- Boris Effects for Adobe Premiere
- Yamaha System 45W 3-piece Speaker System
- Micronet 18GB Media 100 qx Digital Array with ATTO Ultra SCSI controller
- IMS TwinTurbo 128 4MB graphics card
- Terran Movie Cleaner Pro Software
- 4yr Onsite Warranty



Includes 4yr Onsite Warranty

lease only **\$519/mo.**



NEW! MOTOROLA

6000/266MHz

- PowerPC 750
- 64MB/2GB HD
- Zip/24X CD
- 512KB backside L2 cache
- 1MB L3 cache

StarMax

Call for custom quotes on the entire Motorola line!

CALL

MONITORS

RASTEROPS SuperScan 801

21"

- Ultrafine 0.28 dot pitch
- resolutions up to 1600 x 1200

only **\$1799**



RasterOps/Hitachi

MC 17S	\$ 599
MC 6315 NEW 17"	\$ 779
MC 7515 NEW 19"	\$ 1199
MC 801	\$ 1799
MC 801HR	\$ 2199

PRINTERS

EPSON

Stylus Color 3000

NEW!

- Handles paper up to 17" x 22"
- 1440 x 720dpi Photo-quality color printing

only **\$1999**



EPSON

Stylus Color 800	\$ 459
Stylus Color 3000	\$ 1999

Apple

Color StyleWriter 4100 NEW!	\$ 239
Color StyleWriter 4500 NEW!	\$ 339

QMS

2060 BX 13 x 19" 600dpi	\$ 2999
2060 EX 13 x 19" 1200dpi	\$ 5799
MagicColor CX Color Laser	CALL
ColorScript 480 Tabloid Dye-Sub	CALL

DRIVES/STORAGE

LACIE

LaCie 1GB JAZ

- 1GB cart.
- Dantz Retrospect



only **\$399**

LaCie Hard Drives

3.2GB 5400rpm	\$379
4.3GB 5400rpm	\$469
6.4GB AV 5400rpm	\$589
9.1GB AV 7200rpm	\$1179

(All drives shown are internal. External available for slightly more. Call for custom array/raid configs.)

Apple

Available from 1.2GB - 9GBCall



Call for custom Arrays config.

32MB RAM FREE! UMAX

S900/250MHz

- Cache Doubler Ready!
- 604e/64MB/2.1GB
- 8xCD/IMS
- 8MB/Zip

0900

*offer ends 11/15/97.

Call for custom quotes on the entire UMAX line!

only **\$3795**

SCANNERS

Across

MetaScan Pro 36X

- 36-bit, 600 x 1200dpi, 3.3 dynamic range, single pass

only **\$749**



Across

MetaScan 3CX, 24-bit 300dpi	\$ 169
MetaScan Pro 36X, 36-bit 1200dpi	\$ 749
Full Photoshop 4.0 for MetaScan	\$ 249

UMAX

Astra 600S	\$ 269
Astra 1200S	\$ 439*
Astra 1200S Pro w/ Photoshop 4.0	\$ 569
PowerLook 2000	CALL

Polaroid

SprintScan 35 ES	\$ 1499
LightSource Colortron II	\$ 799

* with mfr. \$50 mail-in rebate. Offer ends soon.

CARDS/ACCELERATORS

XLR8

MACHSpeed

- 604e 233MHz CPU Card with MVP

only **\$999** **133MHz 604e**

XLR8

MACHSpeed 604e 180MHz	\$ 399
MACHSpeed 604e 200MHz	\$ 599
MACHSpeed 604e 225MHz	\$ 799
MACHSpeed 604e 233MHz	\$ 999
Radius/ATI/Sonnet	Call for prices

SOFTWARE

Extensis

Fetch 1.5

shipped in promotional package

Extensis

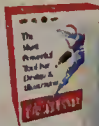
Fetch 1.5

CyberPress 2.0\$ 129⁹⁹



12x9" Drawing Tablet with Macromedia FreeHand 7.0

only **\$399**



Across ArtPad 912

Call for a **FREE** Catalog!
800-765-0020

Order Toll Free M-Th 8am-7pm, Fri til 6pm • 24 Hour Fax
• Customer Service Hotline: 1-800-236-3059

Shop our Web site for thousands of products & great deals!

www.expressdirect.com

express direct **ONLINE**



express direct

2720 North Paulina Avenue
Chicago • Illinois • 60614

International ORDERS SHIPPED DAILY PHONE: (773)244-3000 • FAX: (773)244-3081

Circle 81 on reader service card

MACWORLD November 1997 189

Apple, the Apple logo, Macintosh, Macintosh Quadra and Power Macintosh are trademarks of Apple Computer, Inc. Prices are subject to change without notice. Mac pricing based on purchase of CPU with monitor. "Stand Alone" CPUs may be more. All returned orders may be subject to a 15% restocking fee plus return shipping. Call for RMA before returning. Software, unless defective, cannot be returned after it has been opened. *Lease prices based on 36 month term with 10% purchase option. Call for complete details.

MacConnection®

The Original Macintosh Mail-Order Source—Since 1984!

Order as late as
3 a.m. ET and still get
Overnight Delivery!

Get the Best for Less!

UPGRADE!

Adobe Photoshop 4.0
New features, new filters,
new special effects!

\$169⁹⁵ 42795

Mac OS 8
Upgrade Today!
Get **FREE** Monopoly
True Internet/intranet
integration and much
more make this the
best Mac OS ever!

\$69 44771

Ray Dream Studio 5
Unparalleled ease-of-use,
seamless compatibility,
and blazing 3D performance
of an unbeatable
price!

\$94⁹⁵ 43679

Painter 5
Imitates real paints
and brushes with new
capabilities includes
3D image hose!

\$94⁹⁵ 40268

Peripherals!

Kodak DC-120 Digital Camera

1.2 million
pixel images
(1290 x 960)
plus 3x zoom
for close-ups!

Only \$989 39582

Visioneer Mac PaperPort Strobe

The Easiest
Way to Build a
Colorful
Image!

Only \$329 40456

SyJet 3GB Deal!!
More space than any other!
Less cost per
megabyte,
too!

Only \$299

Hurry!
Offer Ends
10/27/97!

SCSI External \$399
Internal

Palm Pilot Personal

Includes organizer
applications and
desktop software

Synchronizes
with your Mac!

Only \$289⁹⁵ 39152

Apple Color Stylewriter 4100

Economical 4-color
printing at up to 4
pages per minute

Only \$239 42060

US Robotics Sportster 56K Faxmodem

Download in half
the time! No special
installation needed!

Only \$219⁹⁵ 37317

PC-Card Modem 56Kbps!

First
56Kbps PC
Card available
for Macintosh!

**Fastest
modem speed!**

Only \$259⁹⁵ 42361

La Cie Limited External 2x6 Recordable CD Drive

Only \$399

FREE
Toast CD-R
recording
software!

38365

Apple Newton MessagePad 2000

Only \$949 42811

FREE with any MessagePad 2000:
LunarLander, Sub Patrol
and 2 Write Rights
a \$70 value!

Shown with optional keyboard

EPSON Stylus Color 800

New Low Price!

Professional Results at an Economical Price!

- 1440 dpi-photo quality color and laser quality text
- Up to 7ppm Color!
- Buy the Stylus Color 800 Printer and PostScript option together and save \$25!

Only \$399 43617

MacConnection Blowout Bundle!

PowerBook 1400C

- 133MHz
- 1.0GB Hard Drive
- 16MB RAM (Plus an additional 16MB FREE!)
- 11.3 Active Matrix SVGA
- 6X CD-ROM

Lease for as low as \$90²² per mo.

Only \$2599

32MB Total! 45767

While supplies last

Apple Power Mac 4400

The Home Office & Small Business Choice!

- 200MHz
- 32MB EDO DRAM
- 2GB Hard Drive
- 12X CD-ROM Drive
- 2MB EDO VRAM (exp. to 4MB)
- PC Compatible now available

Lease for as low as \$55⁵¹ per mo.

From \$1599! 39504

DELORME Tripmate for Mac

America's most detailed mapping software with a Global Positioning System satellite navigator. Locate town, streets, even addresses with lightning speed!

Only \$164⁹⁵ 43721

RICOH RDC-300 Digital Camera

NEW!

24-bit 640x480 VGA resolution images! 4MB on-board memory stores up to 100 images, incl. JPEG format! Adjustable flip-down LCD monitor.

Only \$499 45096

BCS MacConnection was awarded "Best All Around Company" for the second year in a row by The Boston Computer Society!

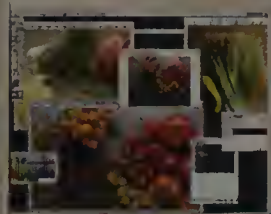
BMUG The highly regarded Berkeley Mac Users Group (BMUG) named MacConnection the Best Mac Mail-Order Company.

OUR POLICY • VISA, MASTERCARD, AMERICAN EXPRESS, and NOVUS cards. No surcharge. • Most products are covered by manufacturer's warranty against defects for at least 30 days from the invoice date. • All returns require prior authorization; please call for an RMA. • We are not responsible for typographical errors. • Pricing and promotions are subject to change without notice. Continental U.S.: Shipping Charges: \$5 per order up to \$5 pounds. On orders weighing 5 pounds or more, shipping is \$1 per pound. Please call for weight/shipping charge information. Items of excessive size and/or weight may require additional days to deliver via a freight carrier. Please check with your sales rep for more details. Barring events beyond our control, all credit card orders placed in weekdays by 3 a.m. ET will ship Airborne Express for delivery the next business day. Saturday delivery available to many areas upon request at no additional charge. Order all day Saturday thru noon Sunday for Monday delivery. Some areas require an extra day delivery. APO/FPO, International orders and Hawaii, Alaska, Canada, Puerto Rico & U.S. Virgin Islands: Shipping may require additional time and charges. All other areas: Call 603-446-4444 or FAX 603-446-7791 M-F 9 a.m. to 5:30 p.m. ET. ©1997 PC Connection, Inc., Marlow, NH. MacConnection & the raccoon characters are registered trademarks of PC Connection, Inc. All other trademarks remain the property of their respective companies.



New Models AND New Low Prices! Power Mac 6500

45750



Lease
for as low as
\$55⁵¹
per mo.

- 300MHz
- 64MB RAM
- 6.0GB HD
- 100MB Zip Drive
- 24X CD-ROM

\$2999

6500's from
\$1599

Monitor sold separately

**4 Hours
a day!**

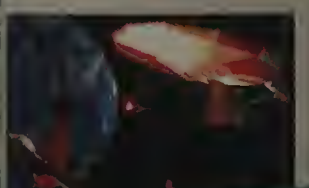
**THE BEST
PRICES ON
MAC SYSTEMS!**

800-800-MACs



New Blazing Speeds! Up to 350MHz! Power Mac 9600

43239



Lease
for as low as
\$121⁴⁶
per mo.

- 350MHz
- 64MB RAM
- 4.0GB Fast SCSI HD
- 100MB Zip Drive
- 24X CD-ROM
- 10BT & AAUI Ethernet

9600's from

\$3499

Monitor sold separately

**Affordable
Flexible
Powerful**

UMAX J700

No Compromises!

- 180MHz 604e
- 24MB RAM
- 2.1GB HD
- 8X CD-ROM
- 2MB VRAM

FREE

Global Village
33.6 External
Modem

Lease
for as low as
\$62³¹
per mo.

Perfect for
Work, School
or Home!

ONLY

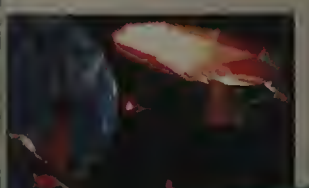
\$1795!

Monitor sold separately



New Blazing Speeds! Up to 350MHz! Power Mac 9600

43239



Lease
for as low as
\$121⁴⁶
per mo.

- 350MHz
- 64MB RAM
- 4.0GB Fast SCSI HD
- 100MB Zip Drive
- 24X CD-ROM
- 10BT & AAUI Ethernet

9600's from

\$3499

Monitor sold separately

SAVE
ask about...

**LEASING
OPTIONS**
for BUSINESS

CALL FOR DETAILS

NEW!
Extended
Service
Plan

Supplement the mfr's
warranty for 4 full years
from date of purchase!

Fastest PowerBook Ever!

PowerBook 3400

Desktop power and
speed...portable
convenience!

FREE!
Visioneer Strobe

Scanner with
any PB 3400
A \$329 Value!

- 240MHz
- 16MB RAM
- 3GB Hard Drive
- 12X CD-ROM
- 256K L2 Cache
- 12.1" Active Matrix
- 33.6 Modem w/10T Ethernet

\$5499 42009

Now From Only

\$3999



Software!

Business

13156 allClear.....	\$219.95
43105 ClarisWorks Office for Mac.....	99
41480 Incorporate.....	68.95
32233 Quicken Deluxe 7.0.....	59.95
35919 Visio Pro.....	329.95

Education

43330 Civilization.....	47.95
42547 ClarisWorks for Kids W/ FREE Mavis Teaches Typing.....	49
33507 Monopoly.....	29.95
43329 Quake.....	47.95
41477 Tie Fighter Collection.....	29.95

Graphics & Design

40341 Adobe Illustrator 7 Version Upgrade.....	94.95
32923 Adobe Photoshop Version Upgrade.....	134.95
40535 DeBabelizer Toolbox w/ FREE DeBabelizer the Authorized Edition Book.....	249.95
35801 Eye Candy 3.0 Power Mac (CD).....	119.95
40268 Fractal Painter 5 Mac Version Upgrade.....	94.95
41786 Fusion 2.0 for Mac.....	489.95
40058 Intellihance 3.0.....	94.95
40055 Mask Pro 1.0.....	294.95
40602 Portfolio 3.0.....	94.95
16769 QuarkXPress Mac.....	649.95

Operating Systems

42550 Mac OS 8 Upgrade.....	69
-----------------------------	----

Utilities

37633 Conflict Catcher 4.0.....	64.95
34213 Oil Change.....	34.95
34133 Spring Cleaning.....	49.95
28320 StuffIt Deluxe.....	72.95
32164 Symantec Antivirus Mac (SAM).....	69.95
42673 Virtual PC w/ FREE Hooves of Thunder.....	147.95

Peripherals!

Accessories

39536 Kensington Orbit.....	\$69.95
32497 Masterlock Notebook Security Cable.....	39.95
25696 Mouse in the Box.....	39.95
33990 Solar Panel Mercury II.....	299.95

CD-ROM

38365 La Cie External 2x6 CD-R Drive w/ Toast.....	399
35051 MarlowCD 8X External SCSI CD-ROM.....	149.95
38347 MarlowCD 12X External SCSI CD-ROM.....	189.95
43120 Hi-Val 16X SCSI CD-ROM Kit.....	249.95

Digital Cameras

39582 Kodak DC120 Digital Zoom.....	989
45096 Ricoh RDC-300 Digital Camera.....	499
43512 Sandisk 20MB Compact Flash w/PCMCIA Adapter.....	349.95
43841 Fuji DX-5 Digital Camera.....	299.95

Graphics/Video Cards & Accelerators

44886 ATI Nexus GA.....	549
40281 Imagine 128 Ser2 8M PCI.....	799.95
37869 IMS Turbo TV PC & Mac TV Card.....	99
45169 MAXpower Pro.....	1295
40465 RenderPix 502-A.....	2995

Monitors

28602 Hitachi MC20 20".....	1399
38305 Mag Innovision 710V2 17".....	499
32695 Mag Innovision DX700T 17".....	699
36276 Mitsubishi 91 TXM 21".....	1549
39386 ViewSonic Optquest Q53 15".....	299.95

Storage

25447 Jaz 1GB SCSI Insider.....	299.95
39581 Microtech RoadRunner 1GB IDE PowerBook HD.....	309
19171 Zip 100 SCSI Drive.....	149.95
19867 Zip Disk 10-Pack Mac.....	129.95

Printers

37817 Epson Stylus Color 800.....	399
-----------------------------------	-----

**SUPER
LOW
SIMMS!**

As Low As

\$4³⁷
PER
MB!

4MB
as low as
\$24⁹⁵

8MB
as low as
\$39⁹⁵

16MB
as low as
\$69⁹⁵

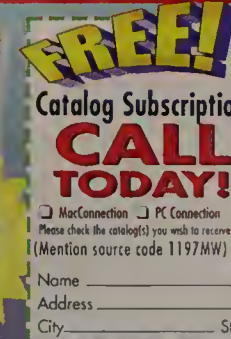
32MB
as low as
\$149⁹⁵



Upgrade
Today!

\$69

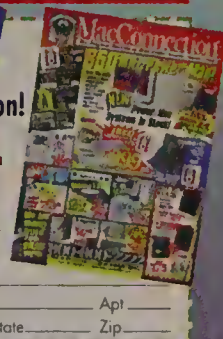
FREE
Monopoly



FREE!
Catalog Subscription!
**CALL
TODAY!**

Please check the catalog(s) you wish to receive
(Mention source code 1197MW)

Name _____ Apt _____
Address _____
City _____ State _____ Zip _____



10,000 HOT PRODUCTS 24 HRS A DAY!

800-986-9232

www.macconnection.com

Now shop online with a name you can trust!

Macworld 1197MW

MacMall

The Mall With It All...For Less!

Instant Rebates - We Will Beat Any Computer

Macintosh® PowerBook® 1400cs



The Hottest Portable System

133MHz PowerPC™ 603e/ 16MB RAM
1.3GB Hard Drive/8X CD-ROM
11.3" Dual Scan Display

up to **166MHz**

\$2,499!

#98963



Also available at MacMall

#98964 PowerBook 1400c/133MHz 603e/16MB RAM/1.3GB Hard Drive/BX CD ROM/11.3" Active Matrix Display **\$2,999**
#98965 PowerBook 1400c/166MHz 603e/16MB RAM/2GB Hard Drive/BX CD ROM/11.3" Active Matrix Display **\$3,499**

FREE!

32MB RAM and an Extra Battery with
ANY Macintosh PowerBook 3400 Series
Purchase! Offer ends 9/26/97
(Call for Details)



Macintosh PowerBook 3400 Series

#98967 PowerBook 3400c/180MHz/16MB RAM/1.3GB Hard Drive/12.1" Active Matrix Display **\$3,499**
#98968 PowerBook 3400c/180MHz/16MB RAM/1.3GB Hard Drive/12X CD/33.6 Modem/12.1" Active Matrix Display **\$3,999**
#98970 PowerBook 3400c/200MHz/16MB RAM/2GB Hard Drive/12X CD/33.6 Modem/12.1" Active Matrix Display **\$4,499**
#98971 PowerBook 3400c/240MHz/16MB RAM/3GB Hard Drive/12X CD/33.6 Modem/12.1" Active Matrix Display **\$5,499**

Iomega® 100MB Zip™ Drive

\$99⁹⁹

#98023
(factory refurbished)
1-Year Warranty
Limit 5 per customer.
Limited supply



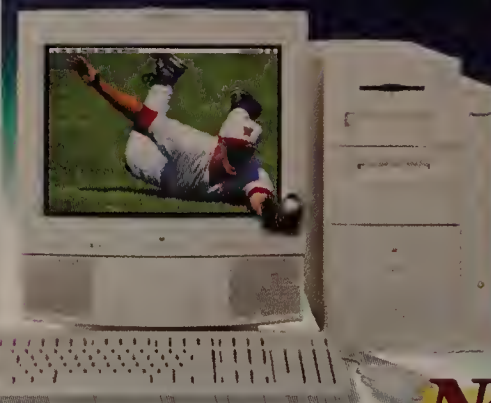
Fuji Zip Disks 100MB Mac 10pk

\$9⁹⁹

#88261
Price reflects \$20 rebate on 10-pk. Price before rebate \$119.



Power Macintosh® 8600



Conquer Your Multimedia

200MHz PowerPC™ 604e/ 32MB RAM
2GB Hard Drive/ 12X CD-ROM
Internal Zip Drive

\$2,999!

#98952 while supplies

New!

Also Available at MacMall

#13854 Power Macintosh 8600/250MHz 604e/32MB RAM/4GB Hard Drive/24X CD-RDM/Zip Drive **\$3,199**
#98952 Power Macintosh 8600/300MHz 604e/32MB RAM/4GB Hard Drive/24X CD-RDM/Zip Drive **\$3,699**
#98950 Power Macintosh 9600/Dual Processor/ 200MHz 604e/32MB RAM/4GB Hard Drive/12X CD-ROM **\$4,199**
#98953 Power Macintosh 9600/300MHz 604e/64MB RAM/4GB Hard Drive/24X CD-ROM/Zip Drive **\$4,599**
#98954 Power Macintosh 9600/350MHz 604e/64MB RAM/4GB Hard Drive/24X CD-RDM/Zip Drive/Video **\$5,399**
Monitor sold separately on all models.

NEW LOW PRICES!

Power Macintosh 4400

200MHz PowerPC™ 603e/16MB RAM/
2GB Hard Drive/8X CD-ROM/256K cache/2MB VRAM

\$1,499!

#98937

Also Available at MacMall

#98938 Power Macintosh 4400/200MHz 603e/32MB RAM/2GB HD/12X CD-ROM/33.6/Modem/Office **\$1,599**
#98939 Power Macintosh 4400/200MHz 603e/Cyrix 166MHz/32MB RAM/2GB Hard Drive/12X CD-ROM **\$2,399**
#98945 Power Macintosh 7300/180MHz 604e/16MB RAM/2GB Hard Drive/12X CD-ROM **\$1,999**
#98946 Power Macintosh 7300/200MHz 604e/32MB RAM/2GB Hard Drive/12X CD-ROM **\$2,199**



**\$200
Rebate!**
when you purchase a 4400
w/an Apple 15" AV Display
Call for Details!
Hurry!
Offer Expires
9/26/97

NEW LOW PRICES!

Power Macintosh 6500

#98940 Power Macintosh 6500/225MHz 603e/32MB RAM/3GB Hard Drive/12X CD/33.6 Modem **\$1,999**
#98941 Power Macintosh 6500/250MHz 603e/32MB RAM/4GB Hard Drive/12X CD/33.6 Modem/Zip Drive **\$1,999**
#98943 Power Macintosh 6500/275MHz 603e/32MB RAM/4GB Hard Drive/12X CD/Creative Studio **\$2,199**
#98944 Power Macintosh 6500/300MHz 603e/64MB RAM/4GB Hard Drive/12X CD/33.6 Modem/Zip Drive **\$2,199**
Monitor sold separately on all models.

Apple® Multiple Scan 15" AV Monitor

13.75" viewable image
size and .28mm dot pitch
\$399⁹⁹

#86245



540MB Removable External SCSI Drive

\$139⁹⁹

After \$50 mail-in rebate.
Price before rebate is
\$189. #88871



CD-R Media As Low As

\$2⁹⁹

#86520 per CD



visioneer PaperPort vx

FREE!
SCSI Adapter

\$129

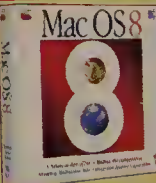
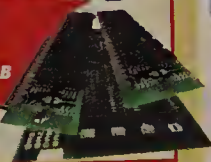
after
mail-in reb
#94



Memory

Starting
as low as
\$6¹⁹ per MB

Prices subject to change. Please call for
most current pricing



Mac OS 8

Order your copy today!
Special Introductory Price

\$66⁹⁹

#97461

FREE!
Marathon Infinity

w/Any Mac OS 8 Purchase!
A \$2 shipping and handling charge
applies. Ask for #97200.



Special Introductory price applies to
the Mac OS 8 Upgrade from version 7.6. Proof of ownership
of version 7.6 will be
required at time of
upgrade purchase.

**Open
24
Hours**

**\$1.8 Billion Inventory
Available!**

Over 45,000 Products!

Custom Configuration!

Fastest Overnight Delivery!



Save up to \$100 on Computers

price!!!

We'll beat any price from any authorized catalog reseller on any CPU we offer. Call us before you order from anyone else. We want your business!



MOTOROLA
Authorized Computer Reseller



160MHz

Motorola StarMax 3000DT

160MHz PowerPC™ 603e/16MB RAM/1.2GB Hard Drive
8X CD-ROM/28.8 Modem/Desktop model (shown above)

\$849!

#85164 (while supplies last)

Also Available at MacMall

#85165 StarMax 3000MT/160MHz/32MB RAM/2.5GB
Hard Drive/8X CD-ROM/33.6 modem *949

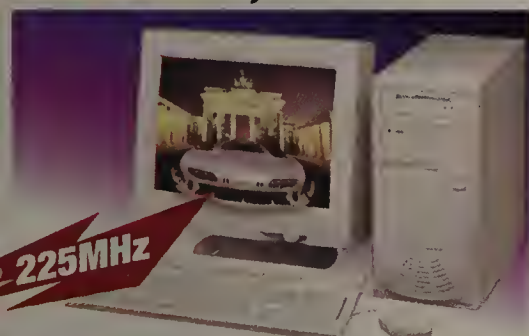
NEW LOW PRICES!

Motorola StarMax 5000MT

225MHz PowerPC™ 603e/32MB RAM/2.5GB Hard Drive
16X CD-ROM/56K Modem/Mini Tower model (shown below)

was \$1099
Now Only **\$1,649!**

#99031



225MHz

All monitors on Motorola systems are sold separately

UMAX
Computer Corporation

UMAX C500/180LT

180MHz PowerPC™ 603e/ 16MB RAM
1.2B Hard Drive/8X CD ROM/256K Cache

\$895!

#98982

(Model shown at right. Price reflects \$50 MacMall Instant
rebate. Price before rebate is \$945.)

Also Available UMAX C600 and S900

#98984 UMAX SuperMac C600/180MHz 603e/16MB RAM/
1.2GB Hard Drive/8X CD ROM/33.6 Modem **\$1,095**

#98973 UMAX SuperMac S900/200MHz 604e/32MB RAM/
2.1GB Hard Drive/8X CD ROM
4MB VRAM (shown at left) **New Low Price! \$2,495**

S900 Model comes with a FREE 32MB RAM Upgrade from UMAX.
Offer valid from Aug. 1 to Nov. 15 or while supplies last. A *4th shipping
and handling fee applies

All monitors on UMAX systems are sold separately



PowerComputing

Power Computing PowerBase 200LP

200MHz PowerPC™ 603e/ 16MB RAM/
2B Hard Drive/12X CD ROM/2MB VRAM

\$999!

(shown
at left)
#99571

Price is good with purchase of 32MB Memory upgrade
and installation. (#86447/#2214) Regular price is \$1099. While supplies last.

Also Available PowerCenter Pro Series

#99011 Power Computing PowerCenter Pro 180LP/180MHz 604e/16MB RAM/
2GB Hard Drive/16X CD ROM/256K cache/Low profile (shown at right) **\$1,695**

#99018 Power Computing PowerCenter Pro 240MT/240MHz 604e/32MB RAM
2GB Hard Drive/16X CD ROM/ 2MB VRAM/Mini Tower **\$2,695**

All monitors on Power Computing systems are sold separately



up to 200MHz

Grab the
**PowerCenter
Pro!**
Speeds up to 240MHz!
Starting at \$1695!



FREE!
UMAX Astra 600s
Scanner w/ every
C600 Purchase!
Offer ends 9/30/97

SONY.

FREE!
Get Sony Speakers with Purchase of
CPD-100sx or CPD-100sf Display!
Offer expires 9/30/97.

#93415 Sony CPD-100sx, 15" CRT **\$339⁹⁹**
#93464 Sony CPD-100sf, 15" CRT **\$389⁹⁹**



FREE!
Adobe PhotoDeluxe
& Presto!
PageManager

UMAX
Vista S6E Color
Flatbed Scanner
\$129⁹⁹
#81385
While supplies last.

**Sportster 33.6 External
Fax/Voice Modem**
\$49⁹⁹

Price after *20 mail-in
rebate. Rebate expires
10/4/97.
#98432

Robotics
The Intelligent Choice in Information Access



**Stylus Color
Pro Printer**
Exclusive
\$199⁹⁹

#96717

#90225 Stylus Color 800 Printer **\$399⁹⁹**

EPSON



\$100 Price Drop! OKIDATA
OL810e/PS Printer
Laser-quality PostScript
8ppm at 1200 X 600dpi
\$499⁹⁹
Save!
was \$599⁹⁹
Now only \$499⁹⁹!
#94077



**Adobe Illustrator® 7.0
Upgrade**
\$97⁹⁹

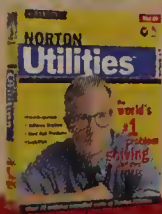
#94828
Introductory price.
Hurry! Limited
Quantity.



**SYMANTEC Norton Utilities
3.5 CD**
\$44⁹⁹

#94820

after \$50 mail-in rebate



Director 6 Upgrade
Industry leading anima-
tion and multimedia
authoring.
\$389⁹⁹
#91226



**Order And
Register to**

**Win a NEW
Mercedes SLK!**



No purchase
necessary.

Order Any Time! Open 24 Hours.

1-800-222-2808

Order Today by 11 pm EST—Get It Tomorrow by 10:30 am

Mention this
Source Code
when you call:
#ZMWD781

ProDirect

800-524-9952

Ad No.
WD1197

"TEST DRIVE" ANY
HARD DRIVE WE SELL
FOR ALMOST
3 MONTHS
WITH OUR
UNBEATABLE
90 DAY
PERFORMANCE
GUARANTEE.

ProDIRECT means...
• Toll-Free Tech Support
• Same Day Shipping
• No Sales Tax Outside MN
• Reseller Pricing Available
• Educational and Government Discounts Available
• Never a Surcharge!



FREE SHIPPING!
Just Ask!

Service • Performance • Price • ALWAYS™

Quantum
CAPACITY FOR THE EXTRAORDINARY™

Performance SPECIALS

7200 RPM 512K BUFFER

9.1 GB \$1065
WIDE or NARROW INTERNAL

★★★★ **WOW!**

4.5GB Atlas II \$675
INTERNAL

4GB Viking \$635
INTERNAL

FASTER!

1GB Atlas \$249
WIDE or NARROW INTERNAL

NEW!

Seagate

10,000 RPM CHEETAH... Awesome!

4.5 GB CHEETAH	775	835
4.5 GB CHEETAH WIDE	865	945
9.1 GB CHEETAH	1229	1289

Seagate SPECIAL PRICE Int. PowerStor

9GB Cheetah Wide 1255 1335
8ms Seek 512K Buffer 10000 RPM 5 Year Warranty

Legendary Performance!

2.5 GB BARRACUDA	535	595
2.5 GB BARRACUDA Wide	595	675
4.5 GB BARRACUDA 4LP	675	735
4.5 GB BARRACUDA 4LP Wide	765	845
9.1 GB BARRACUDA	1095	1155

Seagate SPECIAL PRICE Int. PowerStor

9GB Barracuda Wide 1125 1205
8ms Seek 512K Buffer 7200 RPM 5 Year Warranty

Unmatched Capacity

Only 10¢ per megabyte... Great for server or AV work.

23 GB ELITE	2335	2435
23 GB Fast & Wide ELITE	2385	2485

10 ms Seek 5400 RPM 2048 Buffer 5 Year Warranty

Quantum
CAPACITY FOR THE EXTRAORDINARY™

STRATUS
New Heights of Performance & Value

9 ms Seek 128K Buffer 5400 RPM 5 Year Warranty

2.1GB	\$239	int.	\$295	PowerStor
3.2GB	\$320	int.	\$370	PowerStor
4.1GB	\$349	int.	\$399	PowerStor
6.4GB	\$465	int.	\$515	PowerStor

Quantum
CAPACITY FOR THE EXTRAORDINARY™

"Just Enough" Storage

540 MB MAVERICK	155	215
730 MB LIGHTNING	185	245

11 ms Seek 4500 RPM 128K Buffer 1 Year Warranty

Extreme Value!

1280 MB TEMPEST	195	255
2.1 GB TEMPEST	225	286
3.2 GB TEMPEST	335	395

10.5 ms Seek 4500 RPM 128K Buffer 5 Year Warranty

High Performance AV Rated

1080 MB ATLAS 249 309

Quantum SPECIAL PRICE Int. PowerStor

2GB Atlas II 380 440
7.9ms Seek 512K Buffer 7200 RPM 5 Year 48 Hour Warranty

Quantum SPECIAL PRICE Int. PowerStor

4.5 GB VIKING 635 695

4.5 GB ATLAS II 675 735

9.1 GB ATLAS II 1065 1125

7.9ms Seek 7200 RPM 512K Buffer 5 Year 48Hour Replacement Warranty on all Atlas Hard Drives

Ultra Wide Max. Performance AV Drives

2.0 GB ATLAS II	395	475
8ms Seek 7200 RPM		
4.5 GB VIKING	635	715
4.5 GB ATLAS II	725	805
7.9ms Seek 7200 RPM		
9.1 GB ATLAS II	1095	1175
7.9ms Seek 7200 RPM		

512K Buffer 1024K Buffer

MICROPOLIS 2MB BUFFER
FOR BEST VIDEO TRANSFER RATE!

Blistering Wide AV SPEED

BIG & FAST!

Drives

Tomahawk M4345WAV 4.5GB \$675

7.9ms Seek 7200 RPM 2048K Buffer 5 Yr. Warranty

Tomahawk M3391WAV 9.1GB \$1095

INTERNAL OPTIMIZED FOR MAXIMUM TRANSFER RATE

MASSIVE 2MB ON BOARD CACHING BUFFER...NO MORE DROPPED FRAMES

EXCLUSIVE MICROPOLIS ON THE FLY ERROR CORRECTING CODE...CRITICAL FOR DIRECT TO DISK RECORDING

MICROPOLIS

4.5 GB M4345	595	655
9.1 GB M3391	955	1015

7.9 ms Seek 7200 RPM 512K Buffer 5 Year Warranty

Wide

4.5 GB M4345W	615	695
9.1 GB M3391W	975	1055

7.9 ms Seek 7200 RPM 512K Buffer 5 Year Warranty

Wide AV AV Tuned Drives...
Best for Direct to Disk Recording

4.5 GB M4345WAV	675	755
9.1 GB M3391WAV	1095	1175

7.9 ms Seek 7200 RPM 2045K Buffer 5 Year Warranty

64 MB DIMM \$255 32 MB DIMM \$125
5 VOLT 5 VOLT

SEE BELOW LEFT FOR MORE MEMORY DEALS FROM PRODIRECT

Fast SCSI Acceleration Cards

ATTO ATTO Express PCI Ultra SCSI Single Channel. 315

ATTO DualChannel Express PCI Ultra SCSI 3 40 MB/Sec. 589

FWB JackHammer Fast/Wide 16BIT SCSI 2 for Nubus Macs. 445

FWB PCI JackHammer Single Channel. Ultra SCSI PCI 385

ADAPTEC PowerDomain 2940 UWM Single Channel PCI 195*

ADAPTEC PowerDomain 3940 UWM Dual Channel PCI 539

* Price with Hard Drive Purchase Only.

Get Maximum Mac Transfer Rates with a

ProDirect PowerRAID

All Raids are Plug&Play Ready to Use!

RAID Level 5 Available. Great for Servers!

Quantum New Low Price! 8GB QUANTUM RAID \$1795

Seagate Highest AV Rate 8 GB SEAGATE CHEETAH \$2675

Seagate 18 GB SEAGATE BARRACUDA ULTRA WIDE \$3265

Seagate 10,000 RPM SPEED OEMON 18 GB SEAGATE CHEETAH \$3795

MICROPOLIS 18 GB MICROPOLIS ULTRA WIDE \$2995

Seagate The Legendary 36 GB SEAGATE BARRACUDA \$6095

Seagate 36 GB SEAGATE BARRACUDA \$6495

Seagate ProDIRECT PowerRAID's

GB	DRIVES	ACCEL CHANNEL	FIXED	HOT-SWAP
8	Barracuda ST3471W	Single	2195	2395
36	Barracuda ST19171W	Single	6095	6495
54	Barracuda ST19171W	Single	9395	9995
63	Barracuda ST19171W	Single	10695	11395
90	Barracuda ST19171W	Single	14995	15995
171	Barracuda ST19171W	Single	27995	29995

MICROPOLIS ProDIRECT PowerRAID's

GB	DRIVES	ACCEL CHANNEL	FIXED	HOT-SWAP
8	Tomahawk M4345WAV	Single	2095	2295
36	Tomahawk M3391WAV	Single	5685	5985
54	Tomahawk M3391WAV	Single	8695	9095
63	Tomahawk M3391WAV	Single	9995	10695

Awesome Memory Prices

HIGHEST QUALITY LIFE TIME WARRANTY

PRICES SLASHED!

DIMMs 168 PIN 60ns

SIZE	5Volt FAST PAGE	5Volt EDO	3 Volt* StarMax/Gateway	72 PIN 60ns	30 PIN 70ns
4 MB	n/a	n/a	n/a	19	28
8 MB	35	35	35	28	57
16 MB	75	75	80	50	99
32 MB	125	125	125	118	n/a
64 MB	255	255	255	n/a	n/a
128 MB	855	855	855	n/a	n/a

SIMMs

Additional Discounts on Memory Apply with System Purchase. Ask for details

ProDirect 10830 Nesbitt Ave South
Bloomington, MN 55437

ALL PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE. RETURNED ORDERS ARE SUBJECT TO A RESTOCKING FEE. INTERNATIONAL CUSTOMERS PAY ALL SHIPPING CHARGES. ALL SHIPPING CHARGES ARE NON-REFUNDABLE. TO RETURN MERCHANDISE CALL FOR AN RMA NUMBER. ALL RMAs MUST BE RETURNED WITHIN 10 BUSINESS DAYS OF ISSUANCE. CUSTOMERS ARE RESPONSIBLE FOR SHIPPING CHARGES TO RETURN PRODUCT.

MacMarket

800-905-3034

Fax: 818-708-6399

www.macmarket.com

Government,
Educational,
Fortune 1000
POs' Welcome!

**Free UMAX
Astra 600s
Scanner***

Good Till Sept 30 1997

**Your Source
Since 1988**



BELL Memory LifeTime Warranty

DIMMS 64BIT-168PIN

8MB	\$59	#M1720
6MB	\$85	#M1625
2MB	\$139	#M1621
4MB	\$239	#M1619

SIMMS Powerbook® 3400

32BIT-72PIN 60NS	16MB ..	\$109	#M1849
1MB	24MB ..	\$189	#M1859
3MB	32MB ..	\$199	#M1851
2MB	48MB ..	\$349	#M1861
Powerbook® 1400	64MB ..	\$399	#M1853
1MB	96MB ..	\$799	#M1855
3MB	128MB ..	\$699	#M1857
4MB			

CPU Upgrades newertech

newertech New Lower Prices

200MHz	\$629	#A4418
225MHz	\$739	#A4420
400MHz 2 604e 200MHz CPU's	\$975	#A4424

450MHz 2 604e 225MHz CPU's	\$1059	#A4425
PRO 250MHz PPC 750	\$1195	#A4577
PRO 266MHz PPC 750	\$1995	#A4579

newertech Powerbook® Upgrades

303e 183MHz	\$575	#A4567
303e 167MHz	\$539	#A4564
viewPower	\$239	#A4571

DAYSTAR DIGITAL

Dual Processing CPU Upgrade Cards
for PPC 7300, 7500, 7600, 8500,
8600, 9500, 9600, UMAX Clones

POWER 400+	\$1149	#A4514
POWER 466+	\$1559	#A4518

Latest Software Titles

Microsoft Word 6.0.1	\$149	#S1300
Microsoft Excel 5.0	\$149	#S1302
Adobe Photoshop 4.0	\$329	#S1035
Adobe After Effects 3.1	\$329	#S1055
Adobe Premiere 4.2	\$349	#S1046
Adobe Illustrator 7.0	\$229	#S1015

ixmicro TwinTurbo 128M
(Previously IMS)

4MB VRAM	\$329	#V9240
8MB VRAM	\$489	#V9238
Turbo TV	\$109	#V9345

Video Editing TRUEVISION®

Targa 2000 PRO (PCI)	\$3199	#V9307
Targa 2000 (PCI)	\$2899	#V9200

Yamaha
External Recordable CD Drive 4x6 w/Toast

\$629 #E7307

Atto
Express PCI Ultra Wide Single SCSI 3 Accel.

\$349 #A456B

Power Macintosh®

8600/300MHz 32MB 4GB/24xCD/ Zip Drive/1MB Cache \$3,495 #A1957	9600/350MHz 64MB 4GB/24xCD/ Zip Drive/1MB Cache \$5,295 #A1961	9600/300MHz 64MB 4GB/24xCD/ Zip Drive/1MB Cache \$4,295 #A1959
9600/200MP 32MB 4GB/12xCD/ 4MB VRAM \$3,595 #A1672	9600/200MHz 32MB 4GB/12xCD/ 4MB VRAM \$2,895 #A1671	9600/233MHz 32MB 4GB/12xCD/ 4MB VRAM \$3,149 #A1738

Model	RAM	HDD	CDROM	Misc	Price	Part #
4400/200	16MB	2GB	8x	2MB Video RAM	\$1,369	#A1680
6400/180	16MB	1.6GB	8x	Basic Software	\$1,129	#A1199
6400/200	16MB	2.4GB	8x	Basic Software	\$1,299	#A1189
6500/225	48MB	4GB	12x	Home Software	\$1,695	#A1945
6500/250	32MB	4GB	12x	Home Software	\$1,829	#A1937
6500/250	32MB	3GB	12x	SOHO	\$2,179	#A1943
6500/300	32MB	4GB	12x	Home Software	\$2,549	#A1939
6500/275	48MB	4GB	12x	Creative Studio	\$2,549	#A1941
7300/180	16MB	2GB	12x	2MB VRAM	\$1,895	#A1667
7300/200	32MB	2GB	12x	2MB VRAM	\$2,149	#A1668

PowerBooks®

Model	RAM	HDD	CDROM	Misc	Price	Part #
3400c/180CD	16MB	1.3GB	6x	Modem/10BT	\$3,489	#A1732
3400c/200	16MB	2GB	6x	Modem/10BT	\$3,849	#A1734
3400c/240	16MB	3GB	12x	Modem/10BT	\$4,895	#A1736
1400cs/117	12MB	750MB		10" Dual Matrix	\$1,849	#A1720
1400cs/117	12MB	750MB	8x	10" Dual Matrix	\$1,995	#A1931
1400c/133	16MB	1GB	6x	10" Active Matrix	\$2,389	#A1726
1400cs/133	16MB	1.3GB	8x	11.3" Active Matrix	\$2,349	#A1936
1400c/166	16MB	2GB	8x	11.3" Active Matrix	\$2,849	#A1963

UMAX Computer Corporation

LOW PRICE GUARANTEE
We Will Beat any Advertised Price On All Umax Computers*

SUPERMAC S900 - 604e TOWER CPU's

2-250MHz 64MB/4GB Ultra Raid/12xCD/ 8MB IMS/Internal Zip/100BaseT Wide SCSI III \$6,995 #A1935 After MacMarket Instant Rebate \$6,295	250MHz 32MB/2.1GB Ultra /8xCD/ 8MB IMS/Internal Zip/100BaseT Wide SCSI III \$3,495 #A1644 After MacMarket Instant Rebate \$3,095	233MHz 32MB/2.1GB/8xCD/ 8MB IMS Video Card \$2,995 #A164B After MacMarket Instant Rebate \$2,670
2-200MHz 32MB/2.1GB/8xCD/ 4MB IMS Video Card \$3,295 #A1646 After MacMarket Instant Rebate \$2,895	200MHz 32MB/2.1GB/8xCD/ 4MB IMS Video Card \$2,495 #A1639 After MacMarket Instant Rebate \$2,220	J700-180MHz Desktop 32MB/2.1GB/8xCD/ 2MB IMS Video Card \$1,795 #A1634 After MacMarket Instant Rebate \$1,645

*FREE Astra 600S Scanner With Purchase of Any C600 System

Model	RAM	HDD	CDROM	Misc	Regular Price	After Rebate	Part #
C500i/200	16MB	2GB	12x	33.6 Modem	\$1,095	\$1,070	#A1979
C500e/200	16MB	2GB	12x	10BaseT	\$1,095	\$1,070	#A1977
C500LT/200	16MB	2GB	8x	1MB VRAM	\$995	\$975	#A1681
C600/200	16MB	2.1GB	8x	33.6 Modem	\$1,195	\$1,095	#A1643
C600LT/240	24MB	2.1GB	8x	33.6 Modem	\$1,395	\$1,295	#A1983
C600x/240	32MB	3.0GB	12x	10BaseT	\$1,795	\$1,645	#A1701
C600x/280	32MB	4.0GB	12x	10BaseT	\$2,195	\$1,995	#A1705

MOTOROLA

5 Year Warranty on all Starmax Computers

All Motorola Systems Listed Come With 32MB RAM

Model	Type	CPU	HDD	CDROM	Software	Price	Part #
3000/200	Minitower	603e	2.5GB	8x	SOHO	\$1,695	#A1052
3000/240	Minitower	603e	2.5GB	8x	SOHO	\$2,149	#A1054
3000/240	Minitower	603e	2.5GB	16x	Enterprise 1	\$2,295	#A1060
4000/160	Minitower	604e	1.5GB	8x	SOHO	\$1,849	#A1056
4000/200	Minitower	604e	2.5GB	8x	Basic	\$2,449	#A1063
4000/200	Minitower	604e	4.3GB	16x	Enterprise II	\$2,595	#A1062
5000/300	Minitower	603e	4.3GB	16x	Basic	\$2,295	#A1046
5000/300	Minitower	603e	4.3GB	16x	Enterprise II	\$2,749	#A1065

6000/233MHz 32MB/2.0GB Ultra SCSI/24xCD/1MB/32MB VRAM/ Internal Zip/100BaseT \$3,589 #A1079	Next Generation Speed! PowerPC 750	6000/266MHz 64MB/2.0GB Ultra SCSI/24xCD/1MB/32MB VRAM/ Internal Zip/100BaseT \$4,189 #A1081
--------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------	--------------------------------------------------------------------------------------------------------------------

Monitors

Apple

Multi-Scan 15AV 15".28mm	\$369	#M6909
Multi-Scan 1705 17".28mm	\$629	#M6938
Apple Vision 850 20".26mm	\$1449	#M6579

RASTEROPS® MW ★★★★★ MW ★★★★★

MC600	17" .22mm	\$569	#M6704
MC6315	17" .22mm	\$695	#M6925
MC7515	19" .22mm	\$1095	#M6923
MC801	21" .22mm	\$1559	#M6527
MC801HR	21" .22mm	\$1759	#M6903

SONY
Trinitron® Displays

100SF	15" .25mm	\$399	#M6590
200SX	17" .25mm	\$629	#M6593
200SF	17" .25mm	\$685	#M6584
300SFT	20" .30mm	\$1449	#M6586

ViewSonic®

17GA	17" W/Speakers	\$649	#M6760
GT770	17" .25mm	\$675	#M6766
17PS	17" .25mm	\$695	#M6781
PT775	17" .25mm	\$785	#M6911
G810	21" .25mm	\$1249	#M6780
PT813	FLAT 21" .28mm	\$1525	#M6913
P815	21" .25mm	\$1549	#M6915

Printers

APPLE

Laser 8500 11" x 17" NEW	\$2349	#P3609
Laser 12/640PS	\$1499	#P3248
Laser 4/600PS	\$799	#P3256
StyleWriter 6500	\$469	#P3276
StyleWriter 4500	\$349	#P3271
StyleWriter 2200	\$349	#P3282
StyleWriter 4100	\$289	#P3265
StyleWriter 2500	\$219	#P3367
StyleWriter 1500	\$189	#P3369

EPSON AN INCREDIBLE 1440dpi

Stylus Color 600 .. 8.5"x11"	\$299	#P3485
Stylus Color 800 .. 8.5"x11"	\$389	#P3483
Stylus 3000	\$1749	#P3488

**hp HEWLETT®
PACKARD**

6MP	600dpi, PS-2	\$899	#P3348
4MV	11"x17"	\$2395	#P3235
1600CM color (Demo) .. PS-2		\$1395	#P3410

Scanners

AGFA Agfa ARCUS II 36bit color, 600x1200dpi, Free Trans. Adapter, FotoLook, FotoTune Lite W/ Photoshop \$1479 #S8482 NO Photoshop \$1339 #S9001	Nikon SuperCoolScan Single Pass RGB, 2700dpi, Scans Positive, Negative, Color or Monochrome 35mm \$1629 #S8503
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------

Polaroid

SprintScan 35 LE	\$729	#SB555
SprintScan 35/es	\$1399	#SB547
SprintScan 35 Plus	\$1695	#SB550

UMAX® The Magic of Color®

PowerLook II PhotoShop	\$1274	#S8520
Astra 600S PhotoDeluxe	\$195	#SB921
Astra 1200S w/ Photoshop	\$479*	#S8922

*includes \$50.00 Mail-in Rebate

6924 CANBY AVE. UNIT#104, RESEDA CA. 91335

SPECIAL Mac OS 8 Upgrade Offer!

Mac OS 8 \$59.95 With the Purchase of Any APS Drive

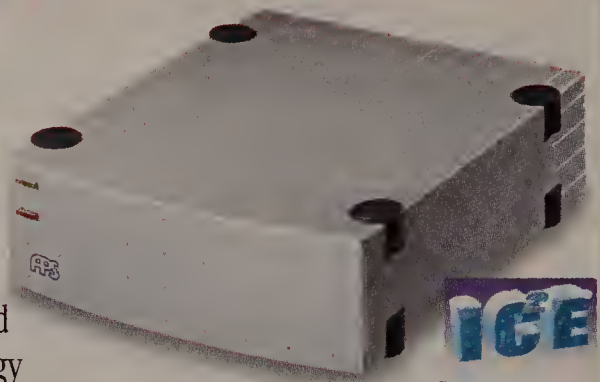
Call 800-945-4920 • 24 Hrs x 7 Days a Week

Everyone Needs This 2GB Hard Drive!

APS Q 2000

- MR heads, PRML and Ultra SCSI technology
- 5400 rpm spindle speed

At only 12¢ per MB (internal), the APS Q 2000 is an excellent choice for a 2GB Ultra SCSI hard disk drive. Its performance is a great match with any application, and it is backed by a 3-year warranty.



\$249⁹⁵ Internal configuration

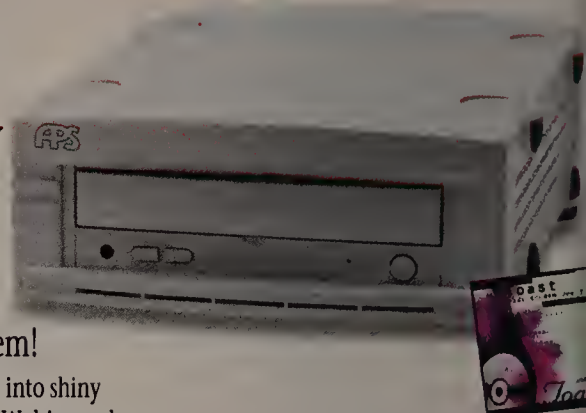
Visit the APS Technologies Online Catalog at <http://www.apstech.com/catalog>

Save On The Drive That Saves You From Wasted CD-R Media!

APSCD-RW

- CD-R stability, rewritable convenience
- Great archive system!

Tired of turning CD-R media into shiny coasters? With the APS CD-RW drive and CD-RW discs, you can overwrite recorded information. It's the end of failed CD-R burns! Ships with Toast recording software in the APS Pro enclosure.



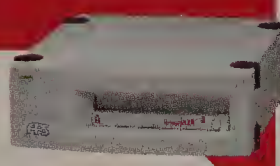
\$549⁹⁵ External configuration APS Pro only

1GB REMOVABLE DRIVE!

APS JAZ

- Hard drive performance
- Huge 1GB capacity on removable media

Jaz has changed the removable storage market forever! The performance of the APS Jaz rivals that of most fixed-platter hard disk drives.



MW EDITOR'S CHOICE

ICE

\$469⁹⁵

Includes THREE cartridges

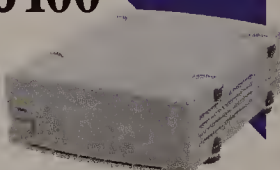
APS Jaz drive with 1 cartridge \$399.95
APS Jaz drive with 4 cartridges \$499.95

NEW MID-RANGE CAPACITY!

APS Q 6400

- Ultra SCSI or ATA
- 5200 rpm

When a 9GB drive is too much and a 4GB drive is too little, the Q 6400 fits the bill! With a formatted capacity of 6236MB it's a great storage solution for workstations or servers. Choose Ultra SCSI or ATA (internal only) in an internal, SR 2000 or APS Pro configuration and expand your storage now!



ICE

\$479⁹⁵

Quantum® Internal configuration

STEAL A 16X CD-ROM

APS CD16

- Super fast 16X CD-ROM performance
- Available in our slimline and SR2000 enclosure

Take advantage of the high performance 16X speed of the APS CD16. This super fast drive is the best value in CD-ROM drives today. Perfect for use with multimedia or any other application requiring rapid data access. The APS CD 16 uses a tray loading mechanism that eliminates the need to carry a CD caddy. Just drop in the CD and go!



\$179⁹⁵

Slimline configuration

FORMIDABLE 4GB!

APS Q4000

- 5400 rpm, Ultra SCSI
- Great for A/V systems

Competitive price and outstanding reliability! The Q 4000 Features MR heads and a digital EPRML channel for accelerated data reads and writes. Formatted capacity is 4136MB. Available as an internal drive, or externally in our SR 2000 and APS Pro enclosures featuring Digital Active Termination and IC'E cooling technology.



ICE

\$379⁹⁵

Quantum® Internal configuration

APS Introduces Two New M•POWER Systems!

APS M•POWER 603e300/2

603e, 300MHz PowerPC Processor, 50 MHz bus

AS LOW AS \$1499

APS M•POWER 604e200/2

604e, 200MHz Power PC Processor, 50 MHz bus

AS LOW AS \$1199

◆◆◆ MacWEEK



First-Generation M•POWER System Deals!

M•POWER 604e200

Mini-Tower enclosure

AS LOW AS \$699

WHILE SUPPLIES LAST!

M•POWER 603e200

Desktop enclosure

AS LOW AS \$1149

WHILE SUPPLIES LAST!

Each System Includes:

- Floppy Drive ■ Bundled Software ■ 2-Year Limited Warranty

Mini-Tower Models Also Include:

- Three 5.25" Int. Bays ■ Four 3.5", 1" High Int. Bays ■ 5 PCI Expansion Slots

Visit Our Online BYOB Configurator at <http://www.apstech.com/aps-byob.html>

APS TECHNOLOGIES®

APS Technologies: The Storage Source!

APS HIGH-PERFORMANCE ULTRA SCSI DRIVES

Model	Description	Int. SR 2000 APS Pro		
APS Q 2000	Quantum Fireball Stratus, 2079MB, 5400 rpm	\$249 ⁹⁵	\$319 ⁹⁵	\$349 ⁹⁵
APS Q 3000	Quantum Fireball Stratus, 3118MB, 5400 rpm	299 ⁹⁵	369 ⁹⁵	399 ⁹⁵
APS Q 4000	Quantum Fireball Stratus, 4136MB, 5400 rpm	379 ⁹⁵	449 ⁹⁵	479 ⁹⁵
APS ST 2000	Seagate 32171N, 2061MB, 7200 rpm	Call	519 ⁹⁵	549 ⁹⁵
APS WD 2000	Western Digital Enterprise, 7200 rpm	449 ⁹⁵	519 ⁹⁵	549 ⁹⁵
APS Q 4500	Quantum Viking, 4345MB, 7200 rpm	679 ⁹⁵	749 ⁹⁵	779 ⁹⁵
APS Q 4300	Quantum Atlas II, 4341MB, 7200 rpm	699 ⁹⁵	769 ⁹⁵	799 ⁹⁵
APS ST 4300	Seagate Barracuda, 4148MB, 7200 rpm	Call	769 ⁹⁵	799 ⁹⁵
APS ST 4500	Seagate Cheetah, 4348MB, 10000 rpm	N/A	N/A	849 ⁹⁵
APS Q 6400	Quantum Fireball Stratus, 6236MB, 5400 rpm	479 ⁹⁵	549 ⁹⁵	579 ⁹⁵
APS Q 9000	Quantum Atlas II, 8682MB, 7200 rpm	1,199 ⁹⁵	1,269 ⁹⁵	1,299 ⁹⁵
APS ST 9000	Seagate Barracuda, 8600MB, 7200 rpm	Call	1,169 ⁹⁵	1,199 ⁹⁵
APS ST 9100	Seagate Cheetah, 9000MB, 10000 rpm	N/A	N/A	1,349 ⁹⁵

APS HIGH-PERFORMANCE ULTRA SCSI DRIVES

Model	Description	Full Height
APS ST 23000	Seagate Elite 23, 22.1GB, 5400 rpm	\$2,399 ⁹⁵

APS ULTRA WIDE SCSI DRIVES*

Model	Description	Int. SR 2000 APS Pro		
APS WD 2000 W	Western Digital Enterprise, 7200 rpm	\$499 ⁹⁵	\$569 ⁹⁵	\$599 ⁹⁵
APS ST 2000 W	Seagate 32171W, 2061MB, 7200 rpm	Call	569 ⁹⁵	599 ⁹⁵
APS Q 4500 W	Quantum Viking, 4345MB, 7200 rpm	699 ⁹⁵	769 ⁹⁵	799 ⁹⁵
APS Q 4300 W	Quantum Atlas II, 4341MB, 7200 rpm	749 ⁹⁵	819 ⁹⁵	849 ⁹⁵
APS ST 4300 W	Seagate Barracuda, 4148MB, 7200 rpm	N/A	819 ⁹⁵	849 ⁹⁵
APS ST 4500 W	Seagate Cheetah, 4348MB, 10000 rpm	N/A	N/A	1,049 ⁹⁵
APS Q 9000 W	Quantum Atlas II, 8682MB, 7200 rpm	1,199 ⁹⁵	1,269 ⁹⁵	1,299 ⁹⁵
APS ST 9000 W	Seagate Barracuda, 8600MB, 7200 rpm	N/A	1,169 ⁹⁵	1,199 ⁹⁵
APS ST 9100 W	Seagate Cheetah, 8683MB, 10000 rpm	N/A	N/A	1,399 ⁹⁵

APS POWERBOOK STORAGE

Model	Description	Int.
APS PowerBook Drive	IBM DCMA-21080, 1080MB, 4000 rpm	\$499 ⁹⁵

APS REMOVABLE DRIVES

Model	Description	Int. SR 1000	SR 2000
APS SQ 5200	SyQuest 5200, 190MB	N/A	N/A \$389 ⁹⁵
APS Jaz	(with 1 cartridge) 1GB	N/A	\$399 ⁹⁵ 399 ⁹⁵

APS MO DRIVES

Model	Description	SR 1000	SR 2000	APS Pro
APS 230 MO	(with 1 cartridge) 217MB	\$299 ⁹⁵	\$369 ⁹⁵	\$399 ⁹⁵
APS 640 MO	Fujitsu M2513A2#N	N/A	469 ⁹⁵	499 ⁹⁵
APS 2.6GB MO	Sony SMO-F544, 2.4GB	N/A	1,769 ⁹⁵	1,799 ⁹⁵

APS CD-ROM DRIVES

Model	Description	External
APS CD16	16X CD-ROM in slimline case	\$179 ^{95*}
APS CD-R Plus	2X record/6X read CD-R (Sony)	399 ⁹⁵
APS CD-R	2X record/6X read CD-R (Phillips)	449 ⁹⁵
APS CD-RW	2X record/6X read rewritable CD-Recordable	549 ⁹⁵
APS CD-R Pro	4X record/6X read CD-R in Pro Enclosure	599 ⁹⁵
APS CD-R Pro	4X record/6X read CD-R in Full Height Enclosure	899 ⁹⁵
APS Jaz/CD-R System	2X record/6X read CD-R	799 ⁹⁵

*Available in an SR 2000 Enclosure for an additional \$100.00

APS TAPE BACKUP SYSTEMS

Model	Description	Internal	External
APS HyperQIC™	Travan 4 Conner QIC 3095, 8GB	\$349 ⁹⁵	\$399 ⁹⁵
APS HyperDAT®	DDS-2DC, 8GB	749 ⁹⁵	799 ⁹⁵
APS HyperDAT® Pro	DDS-2DC, 8GB	849 ⁹⁵	899 ⁹⁵
APS HyperDAT® III	DDS-3DC, 24GB	1,149 ⁹⁵	1,199 ⁹⁵

■ Red indicates either new price or product

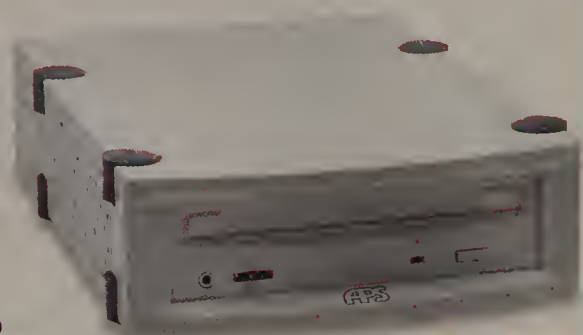


• 30-day money-back satisfaction on all APS brand drives and accessories. Your risk is the cost of shipping. 30-day money-back guarantee does not apply to **MPower** systems. Two year limited warranty on an **MPower** systems. Monitors carry separate warranty from their respective manufacturers.
• SCSI cables sold separately.
• Drive-for-Drive Repair or Replacement Warranty. APS will, at its discretion, replace or repair products found to be defective according to the terms of the product's warranty.
• Refused orders subject to 20% restocking fee.
• International customers must pay for all shipping charges.
• Listed capacities are formatted.
• Actual data compression and tape capacity vary greatly depending on the type of data recorded, other system parameters and environment.
• Prices and specifications are subject to change without notice.
• You need to install system software appropriate to your machine before using our hard drives.
• Not responsible for typographical errors.
• © 1997, Alliance Peripheral Systems, Inc. All Rights Reserved.
Computer case may not exactly match images shown.

Best Archiving Solution At A Bargain Price!

APS CD-R Plus

- 2X record, 6X read mechanism
- Choice of Toast or Retrospect software



Flexibility and a bargain price go together in the CD-R Plus! Choose software to master audio or multimedia CDs, or select Retrospect to create a random access backup of your hard drive - much faster access than a tape backup! Our award-winning SR 2000 enclosure rounds out the package.



\$399⁹⁵
SR 2000 Enclosure

SAFE SCSI HOT SWAPPING!

APS SCSI PowerPlug

- Change devices on your SCSI chain without shutting down!

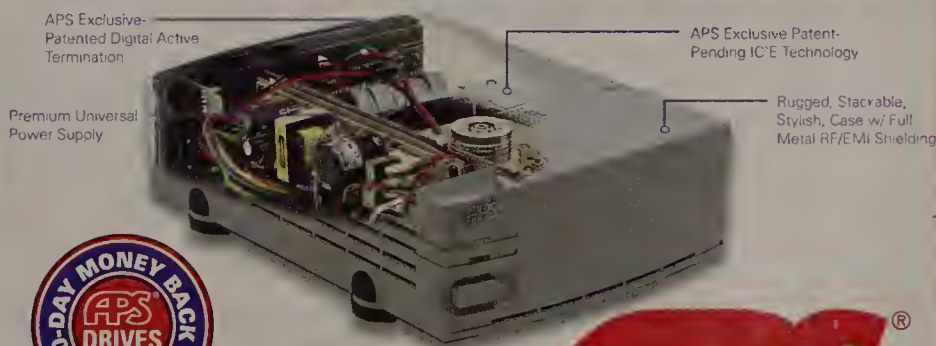
- Available terminated or non-terminated

The APS SCSI PowerPlug comes in two versions: the APS SCSI PowerPlug II which lets you swap devices at the end of the chain and includes Digital Active Termination, and the non-terminated APS SCSI PowerPlug NT which has a SCSI splitter device and is used in the middle of the chain. Standard 50-pin Centronics connectors.



AS LOW AS **\$79⁹⁵**

APS DRIVES: TECHNOLOGY IS THE DIFFERENCE



APS
Technologies

Call 800-945-4920

Visit our Web Page at <http://www.apstech.com/>

International Sales: (816) 920-4109

APS Technologies • 6131 Deramus • Kansas City, MO 64120

†Price reflects mfg.'s \$30 mail-in rebate for registered owners of System 7.6x. Rebate expires 7/31/98. Price before rebate is \$89.95 with the purchase of an APS drive or \$99.95 if purchased separately.

GREAT PRICES, PRICELESS SUPPORT!

Circle 62 on reader service card

MACWORLD November 1997 197

• UNBEATABLE DEALS •

QUANTUM 3GB HARD DRIVE

4500rpm, 10.5ms, 3yr wty
Internal [MAC3240QI] \$299
External [MAC3240QX] \$349

IOmega JAZZ DRIVE

Full retail package in Iomega case.
External w/1 disk [JAZX] \$374
Media any qty [JAZC1GIGMAC] \$83

PCI WIDE CONTROLLERS

Adaptec Single [A2940MUW] \$279
Dual Channel [A3940MUW] \$529

REMUS RAID SOFTWARE

RAID 0, 1 [REMUSLTD] \$135
RAID 0, 1, 4, & 5 [REMUS] \$175

MICROPOLIS 4GB HARD DRIVE

5400rpm, 10ms, 5yr wty
Internal [MAC4300MCI] \$330
External [MAC4300MCX] \$380

CDR74 BLANK MEDIA

5 PACK [CDR74-5] \$28
20 PACK [CDR74-20] \$78
50 PACK [CDR74-50] \$188
100 PACK [CDR74-100] \$340
Add \$1.25 per disk for printable media.
We will not be undersold on CD
Recordable or CD ReWritable media!

STOMPER CD LABEL KIT

100 labels, applicator, & template
software [CDLABELKIT] \$55

• CD RECORDERS •

Smart Storage Solutions CDR Drives Include
5 FREE disks and Toll Free support!

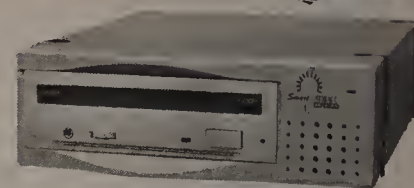
2x6 CD Recorder

- 2x record, 6x playback
- High quality Sony mechanism.
- Caddy loading
- Includes 5 FREE blank CDs.
- Includes #1 rated Adaptec Toast software.

Complete external only \$409

Duo Master with Jaz Drive \$719

CD-R media only \$3.50ea with this drive!



4x6 CD Recorder

- 4x record, 6x playback
- High quality Yamaha mechanism.
- Choose tray or caddy loading
- Includes 5 FREE blank CDs.
- Includes #1 rated Adaptec Toast software.

Complete external only \$639

Duo Master with Jaz Drive \$949

CD-R media only \$3.50ea with this drive!



2x6 CD ReWritable

- 2x record, 6x playback
- High quality Ricoh mechanism.
- Writes to CD-R or CD-RW media.
- Loading: Tray 1MB, Caddy 2MB.
- Includes 5 FREE rewritable CDs.
- Includes #1 rated Adaptec Toast software.

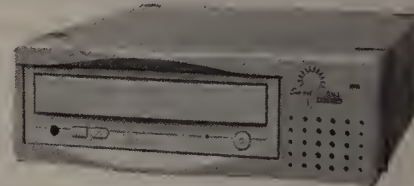
Complete 1MB external \$619

Duo Master with Jaz Drive \$929

Complete 2MB external \$659

Duo Master with Jaz Drive \$969

CD-R media only \$3.50ea with this drive!
CD-RW media only \$19.5ea with this drive!



• CD ROM DRIVES •

Toshiba	15X	99ms	256K	Tray	\$185	[XM3801XM]
NEC	16X	100ms	256K	Tray	\$189	[CDR1610XM]
Nakamichi	16X	130ms	5 Disk	Changer	\$339	[MJS16XM]
Plextor	20X	95ms	512K	Tray	\$277	[PX20TSM]
Panasonic	24X	85ms	512K	Tray	\$215	[CDR508XM]

• SCSI TAPE BACKUP •

These tape drives include backup software and 1 FREE TAPE!

HEWLETT PACKARD

2GB, 4mm, DAT, 12MB/min	External	\$659 [C1534XM]
2-4GB, 4mm, DDS DAT, 42MB/min		\$715 [C1536XM]
4-8GB, 4mm, DDS-2 DAT, 60MB/min		\$909 [C1599XM]
12-24GB, 4mm, DDS-3 DAT, 120MB/min		\$1249 [C1554XM]
72-144GB, 4mm, DDS-3 DAT, 6 tape loader, 120MB/min		\$2779 [C5648XM]

SEAGATE

2-4GB, 4mm, DDS DAT, 66MB/min	\$699 [STD24000XM]
4GB, TR4 minicartridge, 30MB/min	\$439 [TST8000XM]
4-8GB, 4mm, DDS-2 DAT, 48MB/min	\$849 [STD28000XM]
12-24GB, 4mm, DDS-3 DAT, 132MB/min	\$1189 [STD22400XM]

EXABYTE

3.5-7GB, 8mm, DAT, 32MB/min	\$1275 [EXB8205XM]
7-14GB, 8mm, DAT, 60MB/min	\$739 [EXB8700LTXM]
7-14GB, 8mm, DAT, 120MB/min	\$1549 [ELIANTXM]
20-40GB, 8mm, AME, 360MB/min	\$3879 [EXB8900XM]
70-140GB, 8mm, DAT, 10 tape loader, 60MB/min	\$4229 [EXB10HXM]

SONY

4-8GB, 4mm, DDS-2 DAT, 44MB/min	\$759 [SDT5000XM]
4-8GB Pro, 4mm, DDS-2 DAT, 90MB/min	\$829 [SDT7000XM]
12-24GB, 4mm, DDS-3 DAT, 144MB/min	\$1109 [SDT9000XM]
32-64GB, 4mm, DDS-2 DAT, 8 tape loader, 90MB/min	\$1949 [TSL7000XM]

• MEDIA SALE •

1GB JAZ \$83 [JAZC1GIGMAC]	Nomai SyQuest compatible
540MB Nomai \$45 [MCD540-MAC]	44MB \$29 88MB \$31 135MB \$22
230MB Optical \$10 [TJ230]	200MB \$50 230MB \$23 270MB \$34
640MB 3.5" Optical \$27 [TJ640]	Toray 650MB PD Disks [PD650A]
2.6GB Optical \$43 [TJ2.6]	features a padded case \$31
4.6GB Optical \$159 [OMDR4.6]	Fuji 10 pack ZIP media [ZIP100C10M]
4mm120M tape \$19 [DAT120M]	\$135 less \$20 rebate = \$11.5 per disk
4mm125M tape \$31 [DAT125M]	Fuji 2 pack 8mm/160m [DAT8MM160M2]
4mm Cleaning tape \$15 [DAT4MMCLEAN]	\$39 less \$5 rebate = \$17 per tape
DLT 10-20GB \$40 [DLT2]	
DLT 20-40GB \$99 [DLT4]	

We will beat any price on CDR media!

• SCSI HARD DRIVES •

MICROPOLIS We will beat any advertised Micropolis price!

						Int	Ext
4300MB	10ms	5400rpm	512K	MC4743	5yr	\$330	\$380
4550MB	7.9ms	7200rpm	512K	MC4345	5yr	\$519	\$569
9091MB	8.5ms	7200rpm	512K	MC3391	5yr	\$869	\$919

ULTRA SCSI A/V - Drives fine tuned for audio and video applications. 2MB Buffer!

4550MB	7.9ms	7200rpm	512K	MC4345AV	5yr	\$569	\$619
9091MB	8.5ms	7200rpm	512K	MC3391AV	5yr	\$919	\$969

ULTRA WIDE SCSI A/V - Drives fine tuned for audio and video applications. 2MB Buffer!

4550MB	7.9ms	7200rpm	512K	MC4345WAV	5yr	\$589	\$679
9091MB	8.5ms	7200rpm	512K	MC3391WAV	5yr	\$939	\$1029

4300MB	10ms	5400rpm	512K	MC4743W	5yr	\$339	\$429
4550MB	7.9ms	7200rpm	512K	MC4345W	5yr	\$539	\$629
9091MB	8.5ms	7200rpm	512K	MC3391W	5yr	\$885	\$975

Quantum We will beat any advertised Quantum price!

2151MB	10ms	5400rpm	128K	FB32160S	3yr	\$238	\$288
2275MB	8ms	7200rpm	512K	VK32275S	5yr	\$359	\$409
3228MB	10ms	5400rpm	128K	FB33240S	3yr	\$299	\$349
4310MB	10ms	5400rpm	128K	FB34320S	3yr	\$333	\$383
4550MB	8ms	7200rpm	512K	VK34550S	5yr	\$560	\$610
4550MB	8ms	7200rpm	512K	XP34550S	5yr	\$660	\$710
6448MB	10ms	5400rpm	128K	FB36480S	3yr	\$343	\$393
9100MB	8ms	7200rpm	512K	XP39100S	5yr	\$969	\$1019

2275MB	8ms	7200rpm	512K	VK32275W	5yr	\$359	\$449
4550MB	8ms	7200rpm	512K	VK34550W	5yr	\$560	\$650
4550MB	8ms	7200rpm	512K	XP34550W	5yr	\$660	\$750
9100MB	8ms	7200rpm	512K	XP39100W	5yr	\$969	\$1059

FUJITSU We will beat any advertised Fujitsu price!

4400MB	8ms	7200rpm	512K	M2954S	5yr	\$555	\$605
9100MB	8ms	7200rpm	512K	M2949S	5yr	\$979	\$1029

We stock a complete line of IDE drives including Toshiba 2.5" IDE Hard Drives!

Since
The Drive Authority
1987

MEGAHAUS



1-800-786-1184

Sales lines open: M-F 8-8 Sat 9-3 CST

2201 Pine Drive, Dickinson, Texas 77539
(281)534-3919 FAX (281)534-6580

<http://www.megahaus.com>

*Price beating policy is for this magazine issue only, and internal drives only. Competitor must have drive in stock, and must be a new drive with full warranty. Price beating policy is limited to 1 drive per customer. Prices & specifications subject to change without notice. Shipping charges are non-refundable. Returns must be in new condition and in original packaging. Defective items may not be returnable. No refunds on software or special orders (items not listed in ad.) All refunds subject to 15% restocking fee. All trademarks are registered trademarks of their respective companies. Personal checks held for clearance. We reserve the right to refuse any sale for any reason. Bundle price good only if sold at ad price. ©1997 Megahaus Inc.



Digital
Graphix
NOW
LEASING

DIAMOND
SupraExpress
\$200 MODEM
FREE!

LEASE FROM **Digital Graphix**

\$0 Down 100% Business Financing
NO Payments for 90days!



9600/350
DTP Hi-End SOLUTION

- PowerPC 9600/350 w/ 24xCD
- 320MB RAM, 4GB HD, 1MB Cache
- Internal Zip, Apple keyboard
- Viewsonic 21" P810 monitor
- IMS 8MB PCI video card
- Microtek ScanMaker III/Trans/Photoshop
- GCC 808 800dpi 11x17 Printer & Enet
- SyJet 1.3GB Drive with 1 cartridge
- Wacom 12x12 Graphics Tablet
- Sony SDT-5000 DAT Tape Backup

ZERO DOWN!
\$369
PER MONTH
\$12
A DAY!!

FREE!

7300/200 starting
at \$1799!

Go Custom

- PowerPC 7300/200 w/ 12xCD
- 96MB RAM, 2GB HD
- Apple keyboard
- IOmega Zip 100 w/ 1 cart
- Viewsonic 17EA AV monitor
- Scanmaker V300 color scanner
- 4MB Video RAM
- Apple LaserWriter 4/600, 600 dpi printer w/ 2 AppleTalk connectors
- Wacom 6x8 Artz Graphics Tablet

7300/200
VALUE DTP STATION

ZERO DOWN!
\$119
PER MONTH
\$4
A DAY!!

FREE!

\$600/300 starting
at \$2999!

8600/300
MIDRANGE DTP STATION

- PowerPC 8600/300 w/ 24xCD
- 160MB RAM, 4GB HD, 1MB Cache
- Apple keyboard
- Int IOmega Zip 100 w/ 1 cart
- Viewsonic 17EA AV monitor
- Scanmaker v300 color scanner
- ATI 4MB PCI video card
- GCC608 11x17, 600 dpi printer w/ Ethernet connectors
- Wacom 12x12 Graphics Tablet

ZERO DOWN!
\$209
PER MONTH
\$7
A DAY!!

FREE!

9600/300 starting
at \$3999!



9600/300
REAL TIME VIDEO CAPTURE SYSTEM

- PowerPC 9600/300Mhz w/ 24xCD
- 448MB RAM, 4GB HD
- 1MB Cache
- Extended keyboard
- Internal Zip 100 w/ 1 cart
- Sony 20" Trinitron monitor
- IMS 8MB PCI video card
- TrueVision Targa Pro 1000
- Internal 18GB F/W Disk Array with Adaptec SCSI Controller/Remis SW
- Yamaha 4x/6x CDR/10 carts/Toast SW

ZERO DOWN!
\$349
PER MONTH
\$11
A DAY!!

FREE!

Motorola 5000
Systems starting
at \$1959!



MOTOROLA 5000/300
OFFICE WORKSTATION

- StarMax 5000-300Mhz, 16xCD
- 64MB RAM, 4GB HD, 512K Cache
- Extended keyboard
- ViewSonic 17EA AV monitor
- IMS 8MB PCI Video Card
- Int. IOmega ZIP 100 with cartridge
- ScanMaker V300 color scanner
- Microsoft Office
- Okidata 600e, 600 dpi printer w/PowerPrint connector

ZERO DOWN!
\$129
PER MONTH
\$4
A DAY!!

FREE!

Factory Configured Systems

System Description	Price	Lease
Apple PowerBook 1400CS 133/16MB/1.3GB/8xCD	\$2499	\$70.59
Apple PowerBook 1400C 133/16MB/1.3GB/6xCD	\$2799	\$79.07
Apple PowerBook 3400C 200/16MB/1.3GB/6xCD	\$3999	\$112.97
Apple PowerMac 6500 250/48MB/4GB/12xCD/Zip	\$2159	\$61.00
Apple PowerMac 6500 300/64MB/4GB/12xCD/Zip	\$2599	\$73.42
SuperMac S900L 200/32MB/2.1GB/8xCD/IMS 4MB	\$2499	\$70.60
SuperMac S900L 233/32MB/2.1GB/8xCD/IMS 8MB	\$2899	\$81.90
SuperMac S900L 250/32MB/2.1GB/8xCD/IMS 8MB/Zip	\$3599	\$101.67
SuperMac S900L DP250/64MB/4 GB/12xCD/IMS 8MB/Zip	\$6795	\$191.96
StarMax 5000 225/32MB/2.5GB/16xCD/2MB VRAM/Enet	\$1939	\$54.78
StarMax 5000 225/32MB/2.5GB/16xCD/2MB VRAM/Modem	\$1939	\$54.78
StarMax 5000 275/32MB/4.3GB/16xCD/2MB VRAM/Enet	\$2699	\$76.25
StarMax 6000	\$CALL	\$CALL
PowerBase 200/16MB/2GB/12xCD/2MBVRAM	\$999	\$28.22
PowerTower Pro 250/128MB/4GB/16xCD/8MB IMS	\$3795	\$99.00

SALE

SALE

SALE

64 MB
Only \$249

256K Cache
Only \$29

Lifetime Warranty

Memory

Size	DIMMS	SIMMS
4MB	N/A	\$22
8MB	\$41	\$41
16MB	\$76	\$76
32MB	\$139	\$119
64MB	\$249	NA
128MB	\$999	NA

SyQuest & ZIP Drives

ZIP 100 External	\$129
SyJet 1.5GB External	\$329
200MB External	\$379

Removable Cartridges

JAZ 1GB	\$82
Zip 100MB	\$13
Syjet 1.5	\$89
200MB	\$59
88MB	\$41
44MB	\$37



Tape Drives

Sony 8GB (7000)	\$1199
Sony 8GB (5000)	\$999
ExaByte 8700	\$1469
ExaByte 8505XL	\$2039
Sony AIT 50GB	\$3439



IOmega
JAZ 1GB Ext
\$299!

JAZ 1GB
Only \$82

Optical & CDR Drives

IOmega Jaz 1GB Ext./DG Jaz 1GB Ext	\$299/279
Jaz 1GB & 2x/6x CRD Combo Drive	\$869
Pinnacle Apex 4.6GB with cartridge	\$989
Philips 2x/6xCDR with Toast/cart	\$449
Yamaha 4x/6xCDR with Toast/cart	\$699

Optical Cartridges

74 MINUTE CD ROM RECORDABLE MEDIA	\$39.99 BOX OF 10
OEM 128MB	\$7.29
OEM 230MB	\$9.69
OEM 600/650MB	\$24
OEM 1.2/1.3GB	\$38

Scanners

LinoColor Jade Scanner 33bit	\$479
Agfa SnapScan/Color It	\$289
Agfa Arcus II/Transparency/Photoshop	\$1539
Agfa DuoScan/Transparency/Photoshop	\$3999
Epson Expression 636 Professional/Photoshop	\$1379
Microtek Scanmaker III/Trans/Photoshop	\$1379
Microtek Scanmaker V300/Color It	\$149
Microtek E6 Pro/ Full Photoshop	\$519

Monitors

Sony 100SX 15", 1280x1024, .25mm	\$348
ViewSonic 15 E655, 1024x768, .28mm	\$293
ViewSonic 17EA AV, 1280x1024, .28mm	\$569
ViewSonic 17GA, 1024x768, .27mm	\$608
Sony 200SX 17", 1024x768, .25mm	\$619
Sony 200SF 17", 1280x1024, .25mm	\$699
Sony 20SF II-300, 1600x1200, .30mm	\$1449
Sony 20SE II, 1600x1200, .25mm	\$1819
ViewSonic GT800 20", 1600x1280, .30mm	\$1069
ViewSonic P810 21", 1600x1200, .25mm	\$1269
RasterOps MC7515 19", 1600x1200, .22mm	\$1089
RasterOps MC801 21", 1600x1200, .22mm	\$1549
Radius PressView 21SR, 1600x1200, .25mm	\$3189

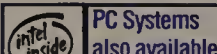
Hard Drives

Description	Internal	External
Quantum 1.2GB 5400 SCSI 10ms	\$189	\$249
Quantum 2GB 4500 Ultra SCSI 10ms	\$219	\$279
Quantum 3GB 5400 Ultra SCSI 10ms	\$319	\$379
Quantum 4GB 5400 Ultra SCSI 7.9ms	\$389	\$449
IBM 4GB 5400 Ultra SCSI 7.9ms	\$489	\$549
Fujitsu 9GB 7200 Ultra SCSI 7.9ms	\$999	\$1059
Seagate 4GB 7200 Barracuda 4.7.9ms	\$739	\$799
Seagate 9GB 7200 Ultra SCSI 7.9ms	\$1289	\$1349
Seagate 4GB 10000 Ultra SCSI 7.9ms	\$849	\$909

Laser Printers

HP 6MP, 8.5x11	\$899
Okidata 600e, 8.5x11, with PowerPrint	\$429
Epson Stylus Color 3000, 17x22	\$1739
Epson Stylus Color 800, 8.5x11	\$439
GCC XL 608, 600dpi, 11x17, Ethernet	\$2289
GCC XL 808, 800dpi, 11x17, Ethernet	\$2949
GCC XL 1208, 1200dpi, 11x17, Ethernet	\$3989

Digital Graphix
Your Value Added Macintosh Source



PC Systems
also available

800-680-9062

USA & CANADA

310-783-1525 FAX
310-783-1515 INTERNATIONAL

20695 S. Western Ave #132
Torrance, CA 90501

<http://www.DigitalGraphix.com>

Order from 5:30am - 5:30pm M-F pst

Prices subject to change without notice. Not responsible for typographical errors. Call for an RMA number before returning equipment.

Circle 36 on reader service card

MACWORLD November 1997 199

WE WILL TRY TO MATCH OR BEAT ANY ADVERTISED PRICE. CALL FOR LATEST PRICING!!

WE ACCEPT PO'S
FROM QUALIFIED FIRMS

MEMORY

SECURITY WILL CALL WINDOW NOW OPEN!
NO SURCHARGE FOR MC, VISA AE & DISCOVER

L.A. Trade has served the PC
market for 10 years...

MACINTOSH MEMORY UPGRADES

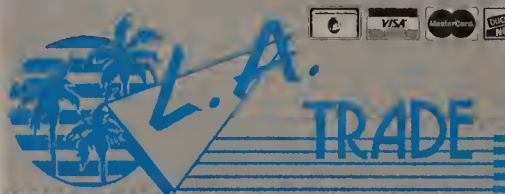
Now we bring our expertise
to the Apple Macintosh user.

YOUR MACHINE	STANDARD	MAX	VIDEO UPGRADE	VIDEO COST	256K/512K/1MG CACHE	2MB	4MB	6MB	8MB	10MB	12MB	16MB	20MB	24MB	32MB	48MB	64MB	128MB
Apple PowerBook 190, 190CS	4/8	36/40					59		79			139			229			
Apple PowerBook 520, 520c, 540, 540c Notebook	4	36					49		69		89	109		169	229			
Apple PowerBook DUO 210, 230, 250 Notebook	4	24					49	65	79	99	119	139	175	28-229				
Apple PowerBook DUO 270c Notebook	4	32					49	65	79	99	119	139	175	28-229				
Apple PowerBook DUO 280, 280c Notebook	4	40					49	65	79	99	119	139	175	28-249	36-329			
Apple PowerBook DUO 2300c/100 Notebook	8/20	56							79	99	119	139	175	199	249	419		
Apple PowerBook 1400	12/16	60/64							74			119		179	239	419		
Apple PowerBook 3400C EDO									79			109		189	209	559	419	1049
Apple PowerBook 5300 Series	8/16/32	56/64					49		79		119	149		169	229	349		
Apple Macintosh TV	5	8							20									
Apple Macintosh IIfx (64 pin)	4	128					119					199					469	
Apple Macintosh IISI	2/3/5	17					40		60			104						
Apple Macintosh IIfx & IISI	4	68	512k	59			40		60			104					469	
Apple Macintosh Classic II, LC, LCII	2/4	10	512k	59		20	30		56									
Apple Macintosh LCIII, LC475, LC550, LC575, LC580	4	36	256k	34			20		44			64			169			
Apple Macintosh LC520	5	36					20		44			64			169			
Apple Macintosh LC580	4	48					20		44			64			169			
Apple Macintosh LC499	4	36					20		44			64			169			
Apple Macintosh LC5200	8	64					20		44			64			169			
Apple Macintosh LC630	5	36					20		44			64			169			
Apple Macintosh IICI	1/5	128					40					119			208		469	
Apple Macintosh II, IIfx, IIfx (w/Pal)	1	32					48		124			149			298			
Apple Macintosh SE30	1/2	32					40		96			119			238			
Apple Performa 400	4	10					22	30	56									
Apple Performa 405, 410, 430	4	10	512k	68		22	30		56									
Apple Performa 450, 460, 466, 467, 475, 476	4	36	256k/512k	34/68			20		44			99			129			
Apple Performa 550, 560, 575, 577, 578, 580	5	36					20		44						129			
Apple Performa 600, 600CD	5	68	512k	59			40					119					469	
Apple Performa 6110CD, 6112CD, 6115CD (pairs)	8/16	72					20		44			64			129			
Apple Performa 6117CD, 6118CD (pairs)	8/16	72					20		44			64			129			
Apple Performa 630, 630CD, 636	4	36					20		44			64			129			
Apple Performa 631CD, 636CD, 640CD	8	52					20		44			64			129			
Apple Performa 635CD	5	36					20		44			64			129			
Apple Performa 637CD, 638CD	8	36					20		44			64			129			
Apple Performa 5200 Series 5200CD, 5215CD, 5300	8/16	64					20		44			64			129			
Apple Performa 6100 Series 6116CD (pairs)	8/16	72					20		44			64			129			
Apple Performa 6200 Series 6200CD, 6216CD, 6218CD	8	64					20		44			64			129			
Apple Performa 6200 Series 6220CD, 6230CD, 6290	8	64					20		44			64			129			
Apple Performa 6205CD, 6214CD	8	64					20		44			64			129			
Apple Performa 6300CD, 6320	16	64					20		44			64			129			
Apple Performa 6400CD, 6360 (2K Refresh)	16	136			94				49			99			149		229	
Apple Centris 610, 650, 660 AV	4	132	512k	59			20		44			64			129			
Apple Quadra 605	4	36	512k	59			20		44			64			129			
Apple Quadra 610	4	68					20		44			64			129			
Apple Quadra 630	4	36					20		44			64			129			
Apple Quadra 650	4/8	132/136					20		44			64			129			
Apple Quadra 660AV	4	68					20		44			64			129			
Apple Quadra 700	4	68	512k	59			48					104					469	
Apple Quadra 800 (pairs)	8	136	512k	59			20		44			64			129			
Apple Quadra 840AV	8	128	512k	59			20		44			64			129			
Apple Quadra 900	4	256	512k	59			48					104					469	
Apple Quadra 950	8	256	512k	59			48					104					469	
Apple Workgroup Servers	8	136					Call		Call			Call			Call			
Power Macintosh 4400/160	8	72	2M/69, 4M/119	59	99/149				49			99			149		299	
Power Macintosh 5200, 5260, 5300	16	136			99/149		20		44			64			129			
Power Macintosh 5400	8	136			99/149				49			99			149		299	
Power Macintosh 6100/60, 6100/66, 6100/66AV (pairs)	8/16	72			29/-		20		44			64			129			
Power Macintosh 6200/75	8/16	72			29/-		20		44			64			129			
Power Macintosh 6400/200	8/16	72			29/-		20		49			99			149		299	
Power Macintosh 6500/225, /250, /275, /300 (Edo)	8/16	72			29/-		20		49			99			149		299	
Power Macintosh 7100/66, 7100/80, 7100/66AV (pairs)	8/16	136	512k	59	29/-		20		44			64			129			
Power Macintosh 7200/75, /90, /120, /120PC	8/16	256	1mg	49	69/109/229				49			99			149		299	
Power Macintosh 7300/166, /180, /200, 7500/100	8/16	256/1gig	1mg	49	69/109/229				49			99			149		299	
Power Macintosh 7600/100, /120, /132, /200	8/16	1gig/512	1mg	49	69/109/229				49			99			149		299	
Power Macintosh 8100/80, /100, /110	8/16	264	512k	59	29/109		20		44			64			129			
Power Macintosh 8100/80AV, /100AV, /110AV (pairs)	8/16	264	512k	59	29/109		20		44			64			129			
Power Macintosh 8500/120, /132, /150, /180	8/16	1gig/512	1mg	49	69/109/229				49			99			149		299	
Power Macintosh 8600/200, /233	8/16	1gig/512	1mg	49	69/109/229				49			99			149		299	
Power Macintosh 9500/120, /132, /150, /180MP, 200	16/32	768/1.5 gig	2mg	87					49			99			149		299	
Power Macintosh 9600/200, /233, /200MP	8/16	768	2mg	87					49			99			149		299	
Color Laserwriter 12/600 PS							20					89						
Color Laserwriter 12/640 PS							20		44			64			129			
Color Laserwriter 16/600 PS							20		44			89						
Motorola StarMax 3000 EDO/160, 200; 4000/160, 200	16/32											91			149			

NEW
168 Pin EDO
3.3V Dimms
Call!!

CALL FOR NEW MODELS NOT LISTED

All products brand new & guaranteed • We buy excess inventory
Trademarks are registered with their respective companies.



22825 Lockness Avenue • Torrance, CA 90501
CUSTOMER SERVICE & TECHNICAL: OPEN M-F, 9-4 PST

POWER COMPUTING

	8MEG	16 MEG	32MEG	64MEG
POWER 80, 100, 110, 120	49.00	91.00	149.00	289.00
POWER CENTER 120, 132, 150, 166, 180	49.00	91.00	149.00	289.00
POWER CURVE 601/120	49.00	91.00	149.00	289.00
POWER TOWER 166/180	49.00	91.00	149.00	289.00
POWER TOWER PRO 180, 200, 225	49.00	91.00	149.00	289.00
POWER WAVE 604/120	49.00	91.00	149.00	289.00
POWER WAVE 604/132, 150	49.00	91.00	149.00	289.00
POWER COMPUTING POWER BASE (EDO)	CALL	CALL	CALL	CALL

NO SURCHARGE FOR MASTERCARD, AMEX, VISA OR DISCOVER. PURCHASE ORDERS ACCEPTED FROM OCTOBER 2000. GOVERNMENT & INSTITUTIONS: California orders add 8.25% sales tax. Returned orders or ordered wrong parts are subject to a 20% restocking fee. We accept international orders shipped via UPS Air, APO, FPO orders welcome. Customers are expected to pay customs and "other" charges if shipped INTL. All credit card charges verified for fraudulent use. SORRY, NO REFUNDS AFTER 30 DAYS - EXCHANGES ONLY. If you receive defective merchandise we exchange only—no refunds. We accept MC, VISA, Discover, AE, prepaid orders, purchase orders, wire transfer, CDO (cashiers check) orders, cash & cashiers checks. Orders shipped by UPS. FEDEX must be signed for. *ALL MANUFACTURER PART #S ARE FOR REF. ONLY • MINIMUM ORDER \$40.00 • NO REFUNDS ON SHIPPING

UMAX MEMORY	
C500/140, 160, 180	8/16/32/64 meg .....49/89/139/279
C600/180, 200, 240	8/16/32/64 meg .....40/80/130/270
J700/150, 180	8/16/32/64 .....49/89/139/279
S900/150, 180, 200, 225 (pairs)	8/16/32/64/128 meg .....49/89/139/279/879
S900 dp/180, 200 (pairs)	8/16/32/64/128 meg .....49/89/139/279/879
ATA Flash for Digital Cameras	
4 Meg	Flash Memory for Apple Newton
8 Meg	4 Meg .....109
16 Meg	8 Meg .....189
20 Meg	16 Meg .....359
32 Meg	20 Meg .....389
48 Meg	24 Meg .....489
64 Meg	

CHECK OUT OUR WEBSITE FOR APPLE BATTERIES!!!

310-539-0019
FAX: 310-539-5844

SECURITY WILL
CALL WINDOW
NOW OPEN

CALL
TOLL FREE

1-800-433-3726
(US and Canada)

ESTAB.
1985

Prices & Availability
Subject to Change
Without Notice

Mon-Fri, 8:00 a.m. to 5:00 p.m. PST
Sat. 10:00 a.m. to 12:00 noon

Check out our website at www.4LATrade.com

e-mail: sales@latrade.win.net

YOUR VALUE LEADER IN HARD DRIVES!

9.1GB
MICROPOLIS
ONLY! \$895
8 MS 7200 RPM, Ultra SCSI

Hard Drives

High Speed AV Rated
Ultra SCSI Fast & Wide Drives

High Speed Desktop Drives

Brand	Capacity	Model	Seek	RPM	Buffer	Int.	Ext.
Quantum	2.1GB	Stratus	9 MS	5400	128K	235	285
Seagate	2.1GB	Medalist	9 MS	5400	128K	245	295
Quantum	2.1GB	Atlas II	8 MS	7200	512K	295	345
Quantum	3.2GB	Stratus	9 MS	5400	128K	320	370
Quantum	4.3GB	Stratus	9 MS	5400	128K	365	415
Micropolis	4.3GB	Stinger	9 MS	5400	512K	345	395
Quantum	4.3GB	Viking	9 MS	7200	512K	575	625
Quantum	4.5GB	Atlas II	9 MS	7200	512K	645	695
Western Digital	4.3GB	Enterprise	8 MS	7200	512K	675	725
Micropolis	4.3GB	M3243	8 MS	7200	512K	525	575
Seagate	4.3GB	Barracuda	8 MS	7200	512K	645	695
Micropolis	4.3GB	Tomahawk	8MS	7200	512K	595	645
Quantum	6.4GB	Stratus	9 MS	5400	128K	475	525
IBM	9.1GB	UltraStar	8MS	7200	512K	945	995
Micropolis	9.1GB	Tomahawk	8 MS	7200	512K	895	945
Quantum	9.1GB	Atlas II	9 MS	7200	1024K	995	1045
Seagate	9.1GB	Barracuda	8 MS	7200	512K	1075	1125
Seagate	23 GB	Elite	9 MS	5400	2048K	2260	2360

Brand/Model	Capacity	Buffer	Seek	RPM	Int.	Ext.
Western Digital	2.1 GB	512K	8MS	7200	495	575
Quantum Atlas 2	2.2 GB	512K	8MS	7200	375	455
Seagate Barracuda	2.2 GB	512K	8MS	7200	495	575
Quantum Viking	2.2 GB	512K	7.9MS	7200	375	455
Fujitsu	4.1 GB	512K	8MS	7200	675	755
Western Digital	4.3 GB	512K	8MS	7200	675	755
Micropolis WAV	4.5 GB	2048K	7.5MS	10000	635	715
Quantum Atlas 2	4.5 GB	512K	8MS	7200	655	735
Quantum Viking	4.5 GB	512K	8MS	7200	595	675
Seagate Cheetah	4.5 GB	512K	8MS	7200	795	875
Seagate Barracuda	4.5 GB	512K	8MS	7200	695	775
IBM UltraStar XP	4.5 GB	512K	8MS	7200	725	805

Micropolis WAV	9.1 GB	2048K	7.9MS	7200	1075	1155
Quantum Atlas 2	9.1 GB	1024K	8MS	7200	1025	1005
Seagate Barracuda	9.1 GB	512K	7.5MS	10000	1115	1195
Seagate Cheetah	9.1 GB	512K	8MS	7200	1195	1275
IBM UltraStar XP	9.1 GB	512K	8MS	7200	995	1075
Fujitsu 9 GB	9.1 GB	512K	8MS	7200	1025	1085
Seagate	23 GB	2048K	9MS	5400	2385	2485

To take full advantage of Fast & Wide Ultra SCSI you will need one of these!

Ultra Wide SCSI Accelerators

ATTO

adaptec

Express PCI Ultra SCSI 3 Wide \$315
Multi Channel Express PCI
Ultra SCSI 3 Wide \$569
SE 4 Wide (nubus) \$589

PowerDomain \$195*
2940UWM Wide Ultra SCSI 3
PowerDomain \$485
Multi Channel Wide Ultra SCSI 3
*with hard drive purchase

Raid Systems

Data Safe™ Server Raids

Fault Tolerant Data Protection

- ✓ Raid Level 5 Data Protection
- ✓ Hot swap cannisters for easy drive replacement on the fly
- ✓ Ideal for Local Apple Servers, Web Servers, Publishing & Graphics, CAD/CAM etc..
- ✓ Turn Key System... Includes Everything Preconfigured and tested **Just Plug and Play!**

Data Safe™
DS 24GB \$5495
DS 36GB \$7495
DS 45GB \$8995



DATA MASTER AV RAIDS

- ✓ AV Raid Level 0 (Striping)
- ✓ Ultra SCSI Wide drive provides Maximum Transfer Rates
- ✓ All components approved by Truvision, Media 100 and Miro & Avid video systems
- ✓ Turn Key System... Includes: Remus Raid Software, Atto Express PCI, Raid Enclosure/Cables
- ✓ Your raid comes preconfigured and tested for direct to disk recording.

DATA MASTER

8GB Barracuda \$1995
18GB Micropolis AV \$2895
18GB Cheetah \$3450
36GB Barracuda \$5995



ALL TAPE DRIVES INCLUDE RETROSPECT ARCHIVING SOFTWARE

Brand/Model	Capacity	Transfer Rate	Price
HP1559 DDS3	144GB	120 Mb/Min.	3895
DLT™ 2500XT	150GB	150 Mb/Min.	4865
DLT™ 2700XT	210GB	150 Mb/Min.	6495
DLT™ 4500	200GB	180 Mb/Min.	6485
DLT™ 4700	280GB	180 Mb/Min.	7895

Tape Backup

Brand/Model	Capacity	Transfer Rate	Price
HP 1599	8GB	90 Mb/Min.	1139
CTD8000	8GB	60 Mb/Min.	789
Sony 7000	8GB	90 Mb/Min.	965
HP1554 DDS3	24GB	120 Mb/Min.	1429
Sony 9000 DD3	24GB	120 Mb/Min.	1169
DLT™ 2000XT	30GB	150 Mb/Min.	2595
DLT™ 4000	40GB	180 Mb/Min.	3945
HP1553 DDS2	48GB	60 Mb/Min.	2455
Sony AITSDX 300C 8mm	50GB	120 Mb/Min.	3295
DLT™ 7000	70 GB	600 Mb/Min.	7295



CD Recorders Players & Jukeboxes

Yamaha CDR 400 4 Speed Recorder/6 Speed Player Huge 2 MB Buffer	665
Yamaha CD-HD Mastering System Featuring CDR 400 & Micropolis 2 GB Stinger AV Hard Drive	1145
Yamaha CD-RD Mastering System Featuring CDR 400 & Iomega 1GB Jaz Drive	995
Ricoh MP 6200 CD ReWritable	525
DSI 24x CD Rom 90ms 3600k/Sec.	195
Toshiba 16x CD Rom	195
Toshiba 12x CD Rom	169
Phillips 8x CD ROM	135



CD Server Towers

Brand/Model	No. of Drives	Speed	Price
Maxtet 800 12X	8	12X	5295
Maxtet 1600 12X	16	12X	9495
Maxtet Turbo 800	8	8X	7995
Quartet 400	4	12X	2595
Servet 700 12X	4	12X	3695
CD Dataserver 816 NEC	8	16X	3195
CD Dataserver 1616 NEC	16	16X	4995

DIRECT SOURCE INT.

NOTICE! DIRECT SOURCE™ will honor existing manufacturer warranties on product purchased from Direct Connections™

DIRECT SOURCE™

Call: **800-555-1256**

Fax: **612-884-0660**



30 Day Money Back Guarantee

on All DSI Products

Edu/Gov/Corp P.O.s Welcome

Additional Discounts May Apply Call for Quotation

DSI Hard Drive Features



- ✓ Premium 40 Watt Universal TUV, CE, FCC Approved Power Supply.
- ✓ Rugged, Stackable case with shielded power supply.
- ✓ Comes Pre-formatted and Includes Charisma's (OS8 compliant) Anubis™ hard drive utilities.
- ✓ Includes all cables & active termination.
- ✓ Internals include necessary cables and brackets and are preformatted for immediate, "plug and play" use.

MAC MEMORY

LIFETIME 24 HOUR REPLACEMENT WARRANTY ON ALL MEMORY

168 Pin DIMMS

	5 Volt	3.3 Volt
8MB	34	34
16 MB	64	64
32 MB	124	124
64 MB	249	249
128 MB	844	844

64Mb DIMM \$249

72 & 30 Pin SIMMS

	30 Pin	72 Pin
4MB	27	18
8 MB	57	27
16 MB	99	49
32 MB	n/a	117

32Mb 72 PIN SIMM \$117

DIRECT SOURCE™

P.O.Box 385190

Minneapolis, MN 55438

Circle 134 on reader service card

MACWORLD November 1997 201

1-800-555-1256 1-800-555-1256 1-800-555-1256 1-800-555-1256

La Cie Hard Drives

LACIE LIMITED

La Cie 2.1GB Quantum Fireball TM External Hard Drive

•4500rpm •10.5ms avg. seek time
•10MB/second transfer rate •SCSI cable, terminator, & Storage Utilities

\$429⁹⁹ (LAC 015156)

La Cie 1.2GB Quantum Fireball TM (LAC 015242) **\$349.99**

La Cie 4.5GB Quantum Atlas II (LAC 015306) **\$979.99**

La Cie 9.0GB IBM Ultrastar (LAC 015192) **\$1699.99**

Printers

HEWLETT-PACKARD

Hewlett-Packard DeskWriter 340CM

•600 x 300 dpi (black) •3-pages per minute •Includes HP Color Kit •Comes with Macintosh adaptor •30-page sheet feeder

\$299⁹⁹ (HP C2663A)

Apple® Color StyleWriter® 4100 (APP M5793LL/A) **\$239.99**

Apple® Color StyleWriter® 4500 (APP M5663LL/A) **\$339.99**

Apple® Color StyleWriter® 6500 (APP M5656LL/A) **\$469.99**

Monitors

SONY

Sony MultiScan 200-SF 17" Color Trinitron Monitor

•15.9" viewable image size •Far Mac & PC •0.25mm aperture grille pitch •Front-panel digital multiscan controls •Anti-reflective screen

\$699⁹⁹ (SON 200SF)

Panasonic PanaSync E50 15" (14" VIS) (PAN E50) **\$299.99**

Sony MultiScan CPD-100SX 15" (13.9" VIS) (SON 100SX) **\$339.99**

Panasonic PanaSync S70 17" (16" VIS) (PAN S70) **\$599.99**

BUSINESS LEASING: No Money Down, No Payments for 30 Days!

- 1) Allows flexibility to add or upgrade equipment at any time
- 2) Conserves your capital
- 3) Saves time, credit decisions are quick and easy
- 4) Covers entire packages—equipment, software, service contracts, and peripherals

*All lease payments are exclusive of applicable taxes. Minimum leasing payment is \$50 per month. All leases are subject to credit approval and require an administrative fee of \$49.95 to be billed on the first invoice. Leasing program administered by Dana Commercial Credit. Leases are Business Leases, 50 down, 36 month term with \$1.00 purchase option.

Call J&R Corporate Sales
1-800-221-3191 or
1-212-238-9080
(\$1400 Minimum Lease Amount)

J&R COMPUTER WORLD

Businesses, Lease Your Next Computer thru the J&R Corporate Sales Division, 1-800-221-3191.

Apple® Power Macintosh® Special

J&R Exclusive Offer! Purchase any Power Macintosh in this ad, and receive a Panasonic E50 monitor for only \$199⁹⁹, or a Panasonic S70 monitor for \$399⁹⁹!

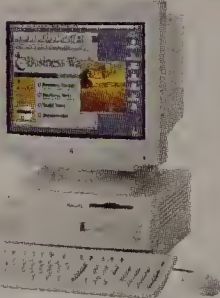
Apple® Power Macintosh® 4400/200 16/2GB/8x-CD

•200MHz PowerPC™ 603e processor •16MB RAM, upgradeable to 160MB •2-gigabyte IDE hard drive •8X CD-ROM •256K L-2 cache •2MB VRAM •Apple SuperDrive® •16-bit audio •2 PCI I/O slots •10Base-T Ethernet •SCSI bus •Current Mac® OS •AppleDesign® keyboard and mouse •Internet access software •Monitor sold separately

\$1499⁹⁹

(APP M5767LL/A)

**Business Lease for NO MONEY DOWN,
NO PAYMENTS FOR 30 DAYS!
Only \$60 per month! (see below for details*)**



Apple® Power Macintosh® 7300/180 16/2GB/12x-CD

•180MHz PowerPC™ 604e processor •16MB RAM, expandable to 512MB •2.0GB hard drive •64K L1 cache; 256K L2 cache memory •12x CD-ROM drive •3.5" Apple® SuperDrive® •2MB VRAM •10Base-T and AAUI-15 connect ports •16-bit stereo sound •Monitor is not included

\$2099⁹⁹

(APP M4946LL/A)

**Lease for
only \$84
a month!***

Apple® Power Macintosh® 7300/200 32/2GB/12x-CD

•200MHz PowerPC™ 604e processor •32MB EDO RAM, expandable to 512MB •2.0GB hard drive •64K L1 cache; 256K L2 cache memory •12x CD-ROM drive •3.5" Apple® SuperDrive® •2MB VRAM •2D graphics •LocalTalk/10Base-T and AAUI-15 Ethernet connectors •Monitor is not included

**Lease for
only \$96
a month!***

\$2399⁹⁹

(APP M5543LL/A)

Power PC and the Power PC logo are trademarks of International Business Machines Corporation, used under license herefrom. Apple, the Apple logo, Macintosh, Power Macintosh, PowerBook, Apple SuperDrive & AppleDesign are registered trademarks of Apple Computer, Inc.

Entertainment Software



Mindscape Creatures

\$34⁹⁹

ClickArt 65,000 Image Pak by Broderbund **\$34.99**
Duke Nukem 3D- Atomic Ed. by GT Interactive ... **\$46.99**
Hercules Animated Storybook by Walt Disney **\$34.99**
Kids Fun Pack- Homework Helpers by Kidsoft **\$12.99**
Links LS (for Power Macintosh) by Access **\$46.99**
Monopoly by Hasbro **\$26.99**



Mindscape Mavis Beacon Teaches Typing (5.0)

\$34⁹⁹

Obsidian by Sega **\$34.99**
Ready For Math with Pooh by Walt Disney **\$34.99**
Ready To Read & Write 2 by Davidson **\$34.99**
Scrabble by Hasbro **\$26.99**
Strategy Challenges Coll. 2 by Edmark **\$19.99**
Versailles 1685 by Interplay **\$39.99**

SUNCOM



Suncom FX3000 Fully Programmable Joystick For Mac

•Control panel software allows creation, modification & saving custom functions or specific games •Pre-programmed templates

\$39⁹⁹

(SUN FX3000-MAC)

Suncom SXF Plus Game Pad For Mac

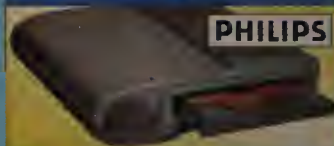
•Quick & responsive game control •Comfortable, ergonomic design •Players Switch for 2 players •12-programmable action buttons

\$34⁹⁹

(SUN SXFPLUS)

Recordable CD-ROM

PHILIPS



Philips OMNIWriter CD-RW

External CD-ReWritable Drive For Mac

•Play, record and back-up music, video and data •Writes CD-Rs, read CD-ROMs, writes CD-RW •Write CDs to back-up data and archive software •An ideal replacement for tape drive

\$499⁹⁹ (PHI OMNI/40)

LaCie 015445 6X Reader/4X Writer External SCSI Drive (LAC 015445) **\$699.99**

Modems

U.S. Robotics



U.S. Robotics External Sportster® 56K-Capable Fax/Modem

•56Kbps Internet, 33.6Kbps data, and 14.4Kbps fax •Flash upgrade capable •Designed for Macintosh

\$219⁹⁹ (USR MACSPORTS6)

U.S. Robotics Sportster Voice Mac (USR EX288MACVC) **\$79.99**

Global Village TelePort 56K X2 (GLV TELES6KX2) **\$179.99**

Global Village TelePort 56K KFlex (GLV TELES6KFLX) **\$179.99**

Scanners

VISIONEER



Visioneer PaperPort Strobe Compact Color Scanner

•Fits between keyboard and Mac •Scans up to 24-bit color and up to 300-dpi optical •Internet friendly

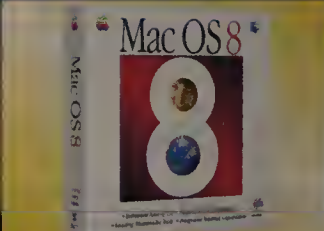
\$299⁹⁹ (VIR STROBE-MAC)

Microtek ScanMaker E6 (MTK SCANE6) **\$279.99**

UMAX Astra 1200S Mac Deluxe (UMX AST12MACDLX) **\$299.99**

Agfa SnapScan 600 (AGF SNAP600MAC) **\$399.99**

Apple® MAC® OS 8



•Mac® OS 8 sets a new standard for enhanced productivity and user-friendliness with its sleek new platinum look, multi-tasking abilities and built-in Internet functionality

\$89⁹⁹ (APP OS8-C)

*30 Mail-in Rebate for users of Mac OS 7.6

To Order Toll Free and Receive a Free Catalogue

800-221-8180

24 Hours, 7 Days, Anywhere In The USA or FAX us at 1-800-232-4432

MAIL ORDERS: J&R Computer World, Dept. MW1197

• 59-50 Queens Midtown Expressway • Maspeth, Queens NY 11378

CALL 1-800-221-8180 for shipping information. DO NOT SEND CASH.

Not responsible for typographical or pictorial errors. Some quantities may be limited. All merchandise brand-new, factory-fresh and 100% guaranteed!

Portable CD-ROM



Sony PRD-650MC 6X CD-ROM Discman®

• Small, lightweight, portable player for PowerBooks • Complies with MPC-2 guidelines • Easy direct connection to Mac through SCSI II

\$299⁹⁹ (SON PRO-650MC)

Panasonic KX-L742 4X Drive (PAN KXLO742) **\$299.99**

Panasonic KX-L783M 8X Drive (PAN KXL783M) **\$399.99**

Digital Cameras



Canon PowerShot 600 Digital Still Camera

\$699⁹⁹ (CAN POWSHOT600)

Kodak DC-25 (KOD DC25) **\$299.99**

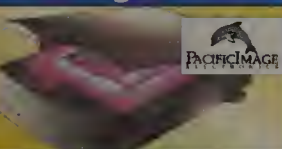
Panasonic PV-DC1000 (PAN PVDC1000) **\$499.99**

Canon PowerShot 350 (CAN POWSHOT350) **\$599.99**

Sony DSC-F1 (SON DSC-F1) **\$699.99**

Kodak DC-120 (KOD DC120) **\$799.99**

Pacific Image Scanners



Pacific Image ScanAce III

with Full Photoshop 4.0

• Single-pass flatbed scanner • 600 x 1200 dpi optical resolution • Scans up to 8.5" x 14" • 68.7 billion colors (36-bit) • SCSI cable and terminator

\$899⁹⁹ after \$100 mail-in rebate (PCF ACEIII-MAC) (Rebate expires 10/31/97)

ScanAce II Mac Scanner (PCF ACEII-MAC) **\$349.99**

ScanAce II with full Photoshop 4.0 (PCF ACEII-MAC) **\$549.99**

J&R COMPUTER WORLD

One of America's Largest
Authorized Apple Dealers

Apple® Macintosh® PowerBook® Offer

J&R Exclusive!

Purchase any PowerBook® in this ad,
receive a **FREE** Iomega Zip Drive & adapter!

Iomega External SCSI Zip Drive **\$149⁹⁹ regular price** (BER ZIP100SCSI)
Iomega PowerBook® Adapter **\$19⁹⁹ regular price** (BER ZIPPOWERADAPT)
\$169⁹⁸ VALUE



Apple® PowerBook® 1400CS/133 16/1.3GB/8x-CD

• 133MHz PowerPC® 603e processor • 16MB RAM • 1.3GB hard drive • 8x CD-ROM drive • 11.3" DSTN color screen • Built-in speaker & microphone • 16-bit stereo

\$2499⁹⁹ (APP M5605LL/A)

Business Lease for **NO MONEY DOWN,**
NO PAYMENTS FOR 30 DAYS!
Only \$100 per month! (see below for details*)



Apple® PowerBook® 1400C/133MHz 16MB/1.3GB/8x-CD

• 133MHz PowerPC® 603e processor • 16MB RAM • 1.3GB hard drive • 8x CD-ROM drive • 11.3" TFT color screen

Lease for only **\$120 a month!** **\$2999⁹⁹** (APP M5891LL/A)



Apple® PowerBook® 1400C/166MHz 16MB/2.0GB/8x-CD

• 166MHz PowerPC® 603e processor • 16MB RAM • 1.3GB hard drive • 8x CD-ROM drive • 11.3" TFT color screen

\$3499⁹⁹ (APP M4909LL/A)

Lease for only **\$140 a month!**



Apple® PowerBook® 3400C/240MHz 16MB/3.0GB/12x-CD

• 240MHz PowerPC® 603e processor • 16MB RAM • 3.0GB hard drive • Swappable 12x CD-ROM drive and 3.5" Apple® SuperDrive®

\$5499⁹⁹ (APP M5550LL/A)

Lease for only **\$220 a month!**



PowerPC and the PowerPC logo are trademarks of International Business Machines Corporation, used under license therefrom.

UMAX Computers



UMAX SuperMac S900L MiniTower

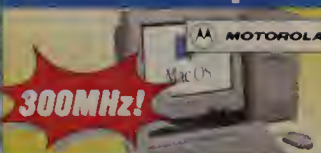
• PowerPC 604e 200MHz processor • 32MB RAM, expandable to 1-gig • 2.1GB hard drive • 8X CD-ROM drive • 128-bit graphics card with 4MB VRAM • Allows the addition of another 604/150MHz processor • 512K Level-2 cache • Mac OS

\$2499⁹⁹ (UMX S900L/200)

UMAX SuperMac S900L, 225MHz (UMX S900L/225) **\$3499.99**

UMAX SuperMac S900L, 250MHz (UMX S900L/250) **\$3499.99**

Motorola Computers



StarMax 5000/300 MiniTower Computer

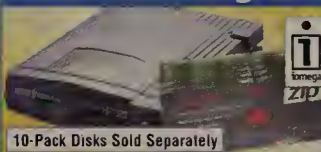
• PowerPC 603e 300MHz processor • 32MB RAM • 4.3-gigabyte hard drive • 16X-speed CD-ROM drive • Built-in Iomega 100MB Zip drive • 512K cache • 10-Base T Ethernet

\$2899⁹⁹ (MOT AMT53300)

StarMax 4000/160 MiniTower 160MHz, 32MB RAM, 2.5GB hard drive (MOT AMT4160-6S) **\$1899.99**

StarMax 4000/200 MiniTower 200MHz, 32MB RAM, 2.5GB hard drive (MOT AMT4200-6) **\$2699.99**

Data Storage



Iomega External SCSI Zip Drive

• Use as hard drive or as mobile storage • Increase data capacity with inexpensive and removable 100MB disks • Includes 1 disk, SCSI interface

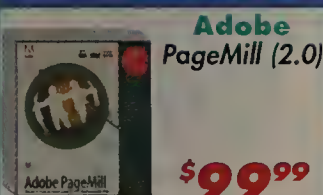
\$149⁹⁹ (BER ZIP100SCSI)

SyQuest ezFlyer 230 SCSI Drive (SYQ EZ230EXTMAC) external . **\$149.99**

Iomega Jaz 1GB SCSI Drive (BER JAZEXTSCSI) . external . **\$399.99**

SyQuest syjet 1.5GB Hard Drive (SYQ SYJET1SE-09) . external . **\$399.99**

Business Software



Adobe PageMill (2.0)

\$99⁹⁹

After Dark (4.0) by Berkeley **\$29.99**

Bookshelf 98- Ref. Library by Microsoft **\$49.99**

Bryce 2 Accessory Kit by MetaTools **\$44.99**

Communicator (4.0), Pro Ed. by Netscape **\$59.99**

Conflict Catcher (4.0) by Casady & Greene... **\$59.99**

Illustrator 7 by Adobe **\$399.99**

Connectix Virtual PC with Windows 3.11



\$149⁹⁹

Kai's Power Goo by MetaTools **\$39.99**

MiniCAD (7.0) by Diehl **\$549.99**

Norton Utilities (3.5) by Symantec **\$99.99**

Office (4.21) by Microsoft **\$479.99**

Organizer (2.0) by Claris **\$69.99**

Painter (5.0) upgrade by Fractal Design... **\$99.99**

Fractal Design Painter 5



\$229⁹⁹

QuarkXPress (3.32) by Quark **\$649.99**

QuickBooks Pro (4.0) by Intuit **\$199.99**

Quicken Deluxe (7.0) by Intuit **\$59.99**

RAM Doubler (2.0) by Connectix **\$59.99**

SAM (4.5)- Symantec AntiVirus by Symantec **\$69.99**

SoftWindows 95 (4.0) by Insignia **\$189.99**

Business Software

MetaTools Kai's Photo Soap



\$39⁹⁹

Speed Doubler (2.0) by Connectix **\$59.99**

Street Atlas USA (3.0) by Delorme **\$44.99**

Up-To-Date & Contact (3.6.5) by Now **\$89.99**

Virex (5.7) by Data Watch **\$59.99**

Word (6.01) by Microsoft **\$299.99**

Works (4.0) Internet Edition by Claris **\$89.99**

Order Your
Free Catalogue
Now!

J&R COMPUTER WORLD

Apple Power Mac 6500/275 275MHz 32MB RAM 4GB Hard Drive **\$2799⁹⁹**

Apple LaserWriter 4/600 PS 2MB 4-ppm PostScript **\$799⁹⁹**

Hewlett-Packard LaserJet 6MP 8-ppm black 600-dpi **\$949⁹⁹**

All Major
Credit
Cards
Accepted

To Order Toll Free and Receive a Free Catalogue

800-221-8180

24 Hours, 7 Days, Anywhere in the USA or FAX us at 1-800-232-4432

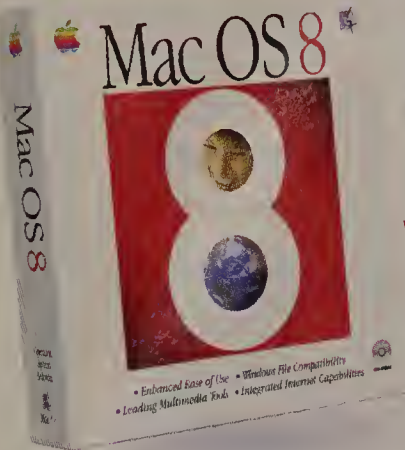
Circle 282 on reader service card

MACWORLD November 1997 203



Your Macintosh® Catalog SuperStore™

PROUDLY SERVING MAC USERS SINCE 1986



REBATE SAVINGS!

Mac OS 8 Upgrade from 7.6

NEW! ONLY \$48⁹⁸*

#75358

***Mac OS 7.6 to 8.0 upgraders:**
Price after exclusive \$20 Mac Zone mail-in rebate. Regular Low Zone price: \$68.98. Ask for item #75358

Previous version upgraders:
Only \$78.98 after exclusive \$20 Mac Zone mail-in rebate. Regular Low Zone price: \$98.98. Ask for item #75357

Exclusive \$20 Mac Zone rebate only valid with the item numbers above.

- Multitasking Finder saves you valuable time
- Live scrolling for greater page file control
- "Connect To" shortcut to visit Web sites or launch browser

Advanced Internet features also include multiple Web browsers, native Java support, Personal Web Sharing, and the push technology of PointCast and Marimba. PLUS a new 3D interface, pop-up menus, interactive setup assistants, the latest QuickTime™ Media Layer technologies and more!

See what a difference 8 makes! Upgrade today!

Perfect for the home or office and upgradable to x2!

Incredible LOW PRICE!

ONLY \$43³⁸*

#75944 WHILE SUPPLIES LAST!

U.S. Robotics Sportster V.34 33.6 Faxmodem w/Voicemail

*Price when purchased with any Mac OS system. After \$20 USR Mfr. rebate. Low Zone price: \$63.36

Run PC software on your Mac at a great low price!



NEW!
Connectix Virtual PC

ONLY \$149⁹⁸

#77998

The professional solution for Web site design!



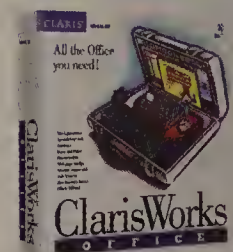
NEW VERSION!

GoLive CyberStudio 2.0

ONLY \$299⁸⁸

#78594

All the Office your small business needs!



NEW VERSION!

ClarisWorks Office

ONLY \$98⁹⁸

#75368

FREE

ZIP DISK LOADED WITH SOFTWARE!

when you buy an Iomega Zip 10-Pack and Mac OS 8 at a special low Zone price!

*After \$20 Iomega mail-in rebate. Low Zone Price \$199.98. While supplies last.

SAVE BIG with the ZipDisk SUPER Bundle!
The Zip 10-Pack & Mac OS 8

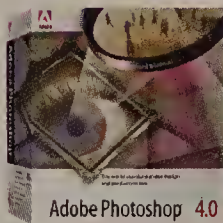
PLUS FREE ZipDisk pre-loaded with Claris Home Page 2.0 (lite version) Conflict Catcher 4 (full version) Claris Em@iler 2.0 (lite version) Virex 5.7 (full version)

ALL FOR ONLY \$179⁹⁸*

Ask for item #75359

SAVE OVER \$160

Improved productivity and creative experimentation!



Adobe Photoshop 4.0 Upgrade

ONLY \$164⁸⁸

#76736

FREE!

Vertigo's Dizzy Included

A \$90 Value!

*Plus \$2.95 for shipping and handling.

High resolution, high bandwidth, improved digital controls - affordably priced!

ViewSonic G771 17" (16" viewable)

ONLY \$569⁸⁸

#75901



Super-charge your Internet communications!

NEW!



Netscape Communicator 4.0 Internet Access Edition

ONLY \$29⁹⁸*

#49935

*After \$30 Mfr. mail-in rebate. Low Zone Price: \$59.98

Use floppies as film, then zoom right in!

NEW!

Sony Digital Mavica FD7 Camera

ONLY \$669⁸⁸

#47467



WHILE SUPPLIES LAST!

16MB of RAM!

ONLY \$59⁹⁸

SIMM



Ordering from The Mac Zone is Easy!

FAX your order to 425.430.3500
CALL US TOLL-FREE!

1-800-436-0606

NOW YOU CAN ORDER ONLINE!

www.maczone.com

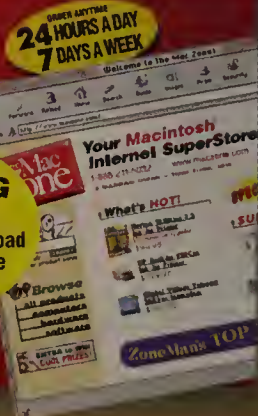
Featuring:

- ✓ The Latest Products!
- ✓ Weekly Specials & Blowout Savings!
- ✓ Special Promotions Just For Our Online Customers!
- ✓ Tech answers online!
- ✓ SECURE Online Ordering!
- ✓ Easy-to-Use Search and Browse Interface!
- ✓ Prices Updated Daily!
- ✓ Mac Advocacy - Hot Tips & News

Visit Your Macintosh Internet SuperStore Today!

COMING SOON!

Buy and download your software online!



Add applicable taxes (for orders in CA, NY and WA). Orders placed before 11 p.m. ET for items in stock will be shipped the same day (Monday system outage, etc.). Shipping charges: domestic ground, 2-day and overnight delivery. Freight is based on average product weight. Handling extra. Insurance available. Credit cards are not charged until the order is shipped. Not responsible for typographical errors. Prices and product availability subject to change without notice. Specials and promotions may be limited to stock on hand.

Circle 71 on your reader service card



We Carry the Full Line of Apple® Macintosh® Computers

- Over 6000 Products to Choose From!
- Cool Bundles and Hot Specials!
- Low Prices Everyday!
- Overnight Delivery only \$3 (up to 2 lbs)

we're open
24 hours a day
7 days a week



WHILE SUPPLIES LAST!
Super-low
MacOS price!

ONLY
\$999
#74738

SUPERmac

Monitor sold separately.

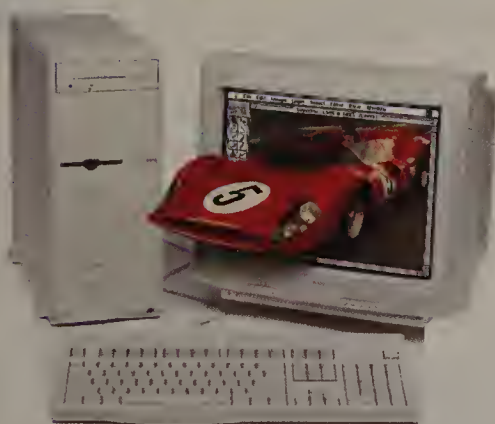
UMAX SuperMac C500LT/200

- Upgradable PowerPC™ 603e processor running at up to 200MHz!
- 16MB RAM, expandable to 144MB
- Spacious 2.0GB hard drive
- 1MB VRAM
- 8X CD-ROM drive
- External & internal Fast SCSI connector
- 2 PCI expansion slots
- 2 high-speed serial ports

Designed for fast, efficient work at home or office

UMAX C600x/240

- Upgradable PowerPC™ 603e processor running at 240MHz!
- 32MB RAM, expandable to 144MB
- 3.0GB hard drive
- 1MB VRAM
- 12X CD-ROM drive
- External & internal Fast SCSI connector
- 3PCI expansion slots
- Built-in 33.6 modem
- Breakthrough Cache Doubler technology doubles bus speed



ONLY
\$1995
#74722

Monitor sold separately.

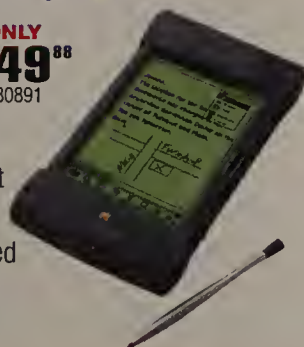
#74723 UMAX SuperMac C600x/280\$2395.00

The fastest, most user-friendly handheld computer!

Newton MessagePad 2000

- 160MHz StrongARM RISC processor
- 16-level, high-resolution grayscale screen
- Over 3 to 6 weeks of life on just 4 AA batteries!
- 2 PC Card expansion slots and an external serial port
- Record and play back voice dictator
- Newton 2.1 operating system & seamlessly integrated applications – e-mail, Web browser, word processor, personal information manager (PIM) and more!

ONLY
\$949⁸⁸
#80891



BLOWOUT
PRICE
WHILE
SUPPLIES
LAST!

ONLY
\$749⁹⁸
#81518



Monitor and keyboard sold separately.

Apple® Workgroup Server® 6150/66

- 1.2GB hard drive
- 66Mhz PowerPC 601 processor
- 16MB RAM
- 4X CD-ROM drive
- System 7.5.1

Includes Powerful Web Software:

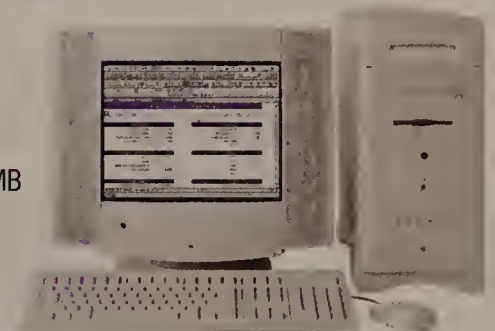
- Adobe PageMill
- WebSTAR
- MacDNS
- NetClock



Superior Performance Plus MS Office!

Apple® Small Business Power Macintosh® 6500/250

- 250MHz PowerPC™ 603e RISC processor
- 48MB RAM, expandable to 128MB
- 4.0GB hard drive
- 100MB internal Zip drive
- Built-in 12X CD-ROM drive
- 33.6/14.4 Kbps data/fax modem
- 16-bit stereo sound; full-motion, full-screen video playback, 2D and 3D accelerated graphics



Incredible
LOW PRICE!

Monitor sold separately.

ONLY
\$1999
#78170

Apple's highest quality inkjet printer!

Apple® Color StyleWriter® 2500

- 720x360 dpi resolution (color and b/w)
- 5 ppm (b/w), .66 ppm (color)
- Includes 64 TrueType fonts
- Automatic ink saturation adjustment for optimum print quality on all media
- ColorSync® technology improves color matching from screen to printer

ONLY
\$189⁸⁸
#87135

Incredible
LOW PRICE!



Corporate Sales
1-800-258-0882

Government Sales
1-800-372-9663

Education Sales
1-800-381-9663

International Sales
1-425-430-3570

A NASDAQ® COMPANY Ticker Symbol: MZON

Copyright © 1997 • The Mac Zone® is a registered trademark of Multiple Zones International, Inc. All rights reserved.

THE MAC ZONE • TRUSTED INTERNATIONALLY

Australia • Austria • Belgium • Brazil • Costa Rica • Chile • Colombia • Denmark • France • Germany • Holland • Hong Kong • India • Israel • Italy • Japan • Kenya • Mexico • New Zealand • Poland • Portugal • Singapore/Malaysia • Spain • Sweden • Switzerland • United Arab Emirates/Middle East • United Kingdom • Venezuela

SOURCE CODE
MW711

PRODUCT INDEX

Category	Page No.	Category	Page No.
Business Operations	206-207	Peripheral Products	212-218
Bar Code		Cables	
Inventory Management		Magnetic Media	
Print Utility		OCR	
Video/Display		Security Systems	
		Software Publishing	
		Switches	
Communications/		Services	244-246
Networking	211-212	Color Printing	
Cross Platform		Data Recovery	
Online Services		Digital Production	
		Repair	
Education/		Systems & Peripherals . . .	218-238
Entertainment	208-211	Account Managers . .	800.888.8622
Discount Software		Carol Johnstone . .	415.978.3152
Music		carol_johnstone@macworld.com	
		Shannon Smith . .	415.974.7414
Graphics	211	shannon_smith@macworld.com	
Clip Art		Niki Stranz	415.978.3105
Translation		niki_stranz@macworld.com	
Memory & Upgrades . . .	239-244	DTP Coordinator:	
Memory Upgrade		Clayton Haberman	415.978.3132
		clayton_haberman@macworld.com	
Ad Trafficking Coordinator:			
Brian Mullin	415.267.1735		
brian_mullin@macworld.com			

Software Blowout!!!
Tel:1-800-785-0048

Microsoft	
MS Office 4.21 (Word, Excel, Powerpt)	\$199
MS Word 5.0/6.0.1	\$75/125
MS Excel 5/Powerpoint 4	\$150
Front Page	\$75
MS Project 4.0	\$250
MS Office Win 97	\$295
Adobe	
Photoshop 4.0	\$335
Pagemaker 6.5	\$275
Illustrator 7.0	\$215
Premier 4.2	\$335
After Effects /Studio Bundle	\$335/1180
Framemaker 5	\$335
Macromedia	
Freehand 7.0/VectorEffects	\$215
Freehand Graphic Studio	\$299
SoundEdit 16 Deck II	\$275
Fractal Design Painter 4.0	\$235
Call for Corel, Claris, Caere, Metatools, Strata, Specular, Symantec, and Denaba products.	
SUPER SOFTWARE	
818-346-1890(FAX) 818-364-6350	
Call 9AM to 6PM PST	Since 1983

CIRCLE 448 ON READER SERVICE CARD

POINT OF SALE

RECEIVABLES • INVENTORY • INTEGRATED ACCOUNTING
SUPPORTING
RETAIL, WHOLESALE, SERVICE ORGANIZATIONS

DB:\$ Retailers Advantage™

Barcode Scanners & Printers
Bar Code Labels ~ Cash Drawers

DB SOLUTIONS, INC. • SINCE 1986
A leading developer of business software

888/461.9501 • 415/461.9500

http://www.posbydbs.com • FAX: 415/461.9501

CIRCLE 415 ON READER SERVICE CARD

Point of Sale
Inventory Management

POS•IM™
the Point of
Sale leader!

• Easy to Use
• Intuitive
• Powerful

Credit Card and Leasing Options Available!

FREE Catalog!
(800) 409-7678

Ensign
SYSTEMS INC.

IF WE DON'T SELL IT, IT'S NOT WORTH LOOKING AT.



PANELIGHT IS YOUR ONE STOP SHOP FOR ALL LEADING BRANDS • SALES, RENTALS, & LEASES • MONEY BACK GUARANTEE.

PANELIGHT OFFERS THE BEST IN
SELF-CONTAINED LCD PROJECTORS,
LARGE FLAT PANEL MONITORS AND
ACCESSORIES FOR PC'S, MAC'S AND
HIGH-RES WORKSTATIONS FROM THE
WORLD'S LEADING MANUFACTURERS:
PANASONIC, EPSON, FUJITSU, NEC,
IN FOCUS, TOSHIBA, PROXIMA, NVIEW,
POLAROID AND OTHERS.



CALL THE EXPERTS AT
PANELIGHT DISPLAY SYSTEMS, INC.

IT'S OUR BUSINESS TO ENSURE THAT
YOUR BIG IDEAS GET THE ATTENTION
THEY DESERVE — NO MATTER WHAT THE
VENUE. WE INTIMATELY KNOW AND SELL
THE LEADING BRANDS. WE CAN RECOM-
MEND WHAT FITS YOUR SPECIFIC NEEDS.

CALL NOW FOR OUR FREE, HIGHLY
INFORMATIVE CATALOG OF PC VGA/
SVGA, MAC, VIDEO, AND WORKSTATION
SOLUTIONS. MOST PRODUCTS CAN BE
DELIVERED OVERNIGHT, AND COME WITH
A MONEY-BACK GUARANTEE. SO, WHY
LOOK ANYWHERE ELSE?

CALL PANELIGHT TODAY!

CALL
PANELIGHT FOR
OUR
FREE CATALOG:
1-800-726-3599.

MON.-FRI., 6:30AM-5:30PM P.S.T.
24-HR. FAX: 415-986-3817
OR E-MAIL: SALES@PANELIGHT.COM
HTTP://WWW.PANELIGHT.COM

PANELIGHT DISPLAY SYSTEMS, INC.,
P.O. Box 190940, SAN FRANCISCO, CA 94119.
OR CALL 415-772-5800.

CIRCLE 481 ON READER SERVICE CARD

Bar Code Pro[®] v3.5 with Veribar[™]

PAT PENDING SYNEX 2540 DPI



Create perfect PostScript (EPS) bar code graphics for Quark, PageMaker, Illus., etc.

Bar Code Pro[®] features:

- ✓ All popular bar code symbologies
 - ✓ Any printer resolution! No fonts required.
 - ✓ No prior bar code experience necessary.
 - ✓ No more bar code film masters.
 - ✓ Veribar built-in verification (optional).
 - ✓ Pays for itself in a single use.
- "Takes sixty seconds to install, five minutes to master!" — MacWorld

CALL FOR FREE DEMO

SNX www.snx.com Tel: (800) 619-0299 Fax: (718) 768-3997
(formerly SYNEX)

CIRCLE 450 ON READER SERVICE CARD

MAC & NEWTON BAR CODE SPECIALISTS

800-988-1914

www.inpath.com

- Mobile Wand & MobileScan for Newton
- Easy Plug and Play Cross Platform - Mac & PC's
- Wireless and Portable Solutions
- CCD / Laser / Wand Readers
- Fants & Software / Bar Code Labels & Printer
- Sun & Dec Bor Code Salutions
- Corporate and School P.O.'s Welcome

Int'l: 415-325-0379 Fax: 415-325-1779
InPath
DEVICES

Newton[®] Joins the Mac-Barcode[®] Family!

One Stop Shopping with Friendly Support from the Experts

Mobile Simple Fast Accurate

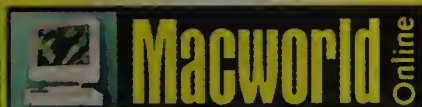
Newton[®] Walk-About[™]
Mac-Barcode ProLabel Software
SmartLaser/SmartScanner/SmartPen
Thermal Transfer Printer
Call for Literature & Free Demo Disk

The Mac-Barcode Co.
800-733-7592
<http://www.mac-barcode.com>

CIRCLE 562 ON READER SERVICE CARD

Want bargains online?

**Bookmark the
Mac Shopper at:**



www.macworld.com/buyers/shframed.htm

Advertise at (800) 888-8622

**POINT OF SALE
INVENTORY CONTROL**

- Retail
- Rentals
- Service
- Manufacturing
- Multi Location

Bar Code/Magnetic Stripe Readers
Receipt Printers • Cash Drawers
Credit Card Auth. & Deposit Software
Download Demos and Interactive Catalog
at our Web Site: <http://www.posdirect.com>
call, fax, or e-mail for a **FREE CATALOG**
(800) 622-7670 sales@posdirect.com
(618) 985-8237 TEL • (618) 985-3014 FAX
Dealer Inquiries Welcome 30 day MBG

VISA P.O.S. DIRECT

CIRCLE 466 ON READER SERVICE CARD

Bar Code Headquarters



- 30 Day \$ Back Guarantee
- Free Shipping in USA
- Toll Free Tech Support

WORTHINGTON
DATA SOLUTIONS

- Portable Batch Readers
- Cordless Interactive RF Bar Code Readers
- ADB Bar Code Readers
- Wand, Laser, CCD, Magstripe or Slot Badge
- PostScript Bar Code Fonts

1-800-345-4220

Or Call 408-458-9938

Website: www.barcodehq.com



BAR CODE SOLUTIONS

- LABELING SOFTWARE
- BAR CODE FONTS
- SCANNERS/LASERS
- GRAPHIC UTILITIES

FREE EXPERT CONSULTATION

FREE LIFETIME TECHNICAL SUPPORT

MONEY-BACK GUARANTEE

UPC/EAN, CODE 39, ITF, POSTNET, 2-D

International Bar Code Expertise
300,000 Customers Worldwide

Bear Rock TECHNOLOGIES

800-232-7625
916-672-0244 FAX: 916-672-1103

Visit Our Website At: www.bearrock.com

"This is the best product of it's kind, and it's reasonably priced too."
— MacUser on PrintBar For Macintosh

Boost the printing power of any application!

**Now, the makers of
LaserMerge Electronic Paper.**

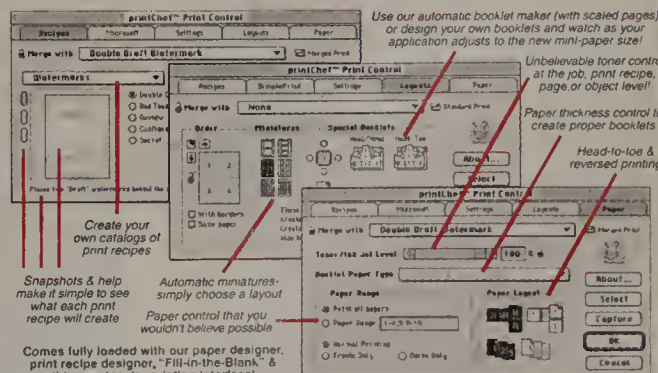
bring you the
**most powerful &
most easy-to-use
printing software
in the world...**

You can just feel the power as printChef does all this for any application and on any printer...

- Create new paper sizes
- Control toner & ink-jet level
- Watermarks (at many levels)
- "Variable data" printing
- "Variable image" printing
- Preview printing with zoom
- Booklets with built-in "page creep"
- Accumulate print jobs into one fax, booklet, or printing
- Flash print to PostScript 10x faster
- Dump a database through a form
- Fill in forms with "Fill in the Blank"
- Create your own multi-ups
- Make full or partial label layouts
- Two cover pages
- Front-to-back, range, & collated prints
- PS Level 2 forms caching
- Stamp different images for each customer, all from one print recipe
- Print logging with security & reports
- Create any bar code from one font
- Serialization
- Sign letters & faxes electronically
- Imports EPS & PICT images
- Control print resolution
- 38 Print-time text commands & 100 database commands
- You can move, rotate, colorize, clip, scale, & duplicate each object & page to your design...

and use this power to make your own letterheads, business cards, invoices, name plates, labels, badges, envelopes, and much, much more...

printChef[™]
Spices up any application's printing...



To boost the printing power of any application,
call **(800) 648-6840**

or try our demo at www.mindgate.com

Introductory priced at **\$45**

...so that everyone can make their printer sizzle right now!

60-day money-back guarantee

Installs in English, French, German, and Spanish

printChef is a print extension that sits between any application & any printer driver. It uses Print Recipes that you design to control any application's output...

System 7+ required! For 680x0 & any PowerMac. Works with ANY printer & ANY application. printChef's miracles require only 32K of memory. QuickDraw GX is NOT required!

List Price Base unit \$95
Net \$15-\$25/unit
(615) 937-6800
(615) 937-6801

Worldwide Fax Orders



MindGate[®] Technologies, Inc.
164 Oliver Smith Road
Flintville, TN 37335-5335

Order Direct

VISA

MasterCard

Discover

or thru

WAREHOUSE

800-255-4227

CIRCLE 517 ON READER SERVICE CARD

Student - Teacher - School Discounts!

WE WILL BEAT ANY ADVERTISED PRICE * LATEST VERSIONS & FULL PACKAGES

18 Perfect People 1.0.....	\$199
3D AcuWorlds Models	\$79
3D Dizzy 1.0	\$69
3D HotText 1.0	\$99
3D Words 1.0	\$69
4th Dimension 6.0.....	\$249
Adam Comprehensive Student ED	\$99
Agfo SnapScon	\$279
Alios Sketch! 2.0.2	\$199
Amopi 3.0	\$249
Anubis Utility	\$49
ArchiCad 5.0 Student	\$129
Astound 3.0	\$99
Astro 600S Scanner PhotoDeluxe.....	\$209
Authorware 4.0	\$749
Authorware Studio 4.0.....	\$2649
AutoCAD R12 w/Ame	\$199
BBEdit 4.0.4	\$79
Berserk 1.3	\$159
Bitstream Collection.....	\$129
Boris FX Limited 3.0	\$129
Convos 5.0.2	\$179
ChemOffice Pro 4.0	\$299
Claris Draw 1.0	\$119
Closs Action	\$65
Classic PIO Portners.....	CALL
ClearVideo 1.2	\$229
Cliff Notes StudyWare Geometry	\$25
Codo 1.0	\$249
Coda Finole 97	\$249
ColorDrive 1.5.3	\$89
Conflict Catcher 4.0	\$59
CorelDRAW Suite 6	\$169
Cricket Groph III 1.5.3	\$79
Cubose Audio XT/VST 3.5	\$399
Cubose VST 3.5	\$199
Cyclonist 1.0	\$249
Dobbler 2.0	\$39
DeBabelizer Toolbox 1.6.5	\$229
DeltaGroph 4.0	\$89
DesignWorkshop 1.7	\$229
Detailer 1.0	\$129
Digital Box Office	\$249
Director 6 Studio	\$679
DrawingSlote II 12x12	\$299
EPS Invigorator 1.5	\$249
Encore 4.1.1	\$249
EndNote Plus 2.2 w/EndLink	\$165
Epson Expression 636-Executive	\$769
Epson Stylus 600 InkJet Printer.....	\$289
Epson Stylus Color 3000 InkJet Print....	\$1929
Epson Stylus Photo InkJet Printer	\$475
Eudoro Pro 3.1	\$49
Expression 1.0	\$99
FostTrack Schedule 5.0	\$139
FileGuard 3.0	\$119
FileMaker Pro 3.0	\$139
Final Draft 4.1	\$149
Flosh 2.0	\$149
Flo' 2.6.3	\$69
Form Z 2.92	CALL
FreeHand 7.0	\$149
Globalink 4In1 Power Translotor 6.0 ...	\$129
Hercules Animated StoryBook	\$39
Hollywood FX 3.0	\$359
HomePage 2.0	\$69
HyperCard 2.3.5	\$89
HyperStudio 3.1	\$119
Illuminaire Paint	\$749
Illuminaire Studio	\$1299
ImageAXS	\$59
Inspiration 5.0	\$79
IntelliHance 3.0	\$69
Iomega Jaz 1GB Ext Drive Ma/PC.....	\$389
Japanese Language Kit 1.2	\$129
Java Beat	\$75
Jmp 3.2	\$329
Judson-Rosebush Wildside Bundle 5 ..	\$149
KPT Bryce 2.0 Kit	\$49
KPT Final Effects 3.0	\$399
KPT Final Effects AP 1.0	\$109
Kai's Photo Soap 1.0	\$49
Kai's Power Goo 1.0	\$49
Kai's Power Tools 3.0.2.....	\$85
KaleidaGraph 3.0.....	\$89

\$599

Photo Design
Illustration
Page Layout

Market-Leading Page Layout software
Market-Leading Illustration software
Market-Leading Photo Design software

From the world's leading desktop publishing software manufacturer ... 3 market leading DTP Tools

DeskTop Publishing Bundle

\$229

Boris FX Pro 3.0

Plug-In for Adobe Photoshop

NEW!

\$79

Chromatica
Photoshop Plug-In

NEW!

\$199

Dramatica Pro 2.0
ScreenPlay Writing

NEW!

CALL

ClarisWorks 5.0
All Around Office Program

\$49

Virex 5.7
Anti-Virus Program

\$159

Aurorix 2
Plug-In for After Effects

NEW!

\$179

GoLive CyberStudio
CyberStudio 3.0
Broadcast & Web Video

NEW!

\$549

MTropolis 2.0
Authoring Program

\$129

CodeWarrior Pro R1
C/C++ Programming

NEW!

\$85

Mac OS 8
System 8.0
System Software for the Macintosh

NEW!

\$329

Infini-D 4.0
3D Modeling & Animation

\$69

PhotoTools 1.1
Photoshop Plug-In

Call for FREE Catalog!
(800) 831-2295
Includes Complete Price List & Free Product Info.

****SAME DAY SHIPPING ON MOST ITEMS**
****ADOBE, SYMANTEC & MICROSOFT PRODUCTS AVAILABLE TO QUALIFIED STUDENTS, TEACHERS & SCHOOLS.**
****SCHOOL PURCHASE ORDERS WELCOME.**
****NO SURCHARGE ON CREDIT CARDS.**
****IBM & MAC PRODUCTS AVAILABLE.**

*Not responsible for typographical errors
*Prices subject to change
*The Software Source has the right to refuse any order

Visit our **NEW** Web Site!!
<http://www.swsonline.com>

The
SOFTWARE
Source

1-800-831-2295

1750 Brielle Ave, Unit A-2
Ocean, NJ 07712
PHONE (732) 695-2100
FAX (732) 695-9371
E-MAIL: SFTSWS@AOL.COM

Student - Teacher - School Discounts!

WE WILL BEAT ANY ADVERTISED PRICE * LATEST VERSION & FULL PACKAGES



\$479

Artist's Dream Bundle
Wacom Art Z II 6x8 & Painter 5.0



\$419

Epson Stylus 800
Color Inkjet
High performance 1440x720 dpi




\$119

Bryce 2
3D Terrain Program



\$1349

ElectricImage
BROADCAST
Hi-Speed Rendering



NEW!
\$349

Director 6
E-Doc
Director 6 with Online Documentation



\$79

Eye Candy 3.0.1
Photoshop Plug-in that contains several filters



\$199

Freehand Graphics Studio
Includes FreeHand 7, Fontographer, Extreme 3d, and xRES



\$149

NetObjects Fusion 2
Smart Way to Build Web Sites



\$339

MiniCad 7.0
2D/3D Cad Software



\$199

Fractal 3D Suite
Includes Ray Dream Studio, Poser 2 & Detailer



\$149

Iomega Zip 100
External Drive
Expand your Hard Drive Without Limits!



NEW!
\$109

Retrospect 4
Backup Software



CALL

LightWave 3D 5.5
Modeling & Animation

Call for FREE Catalog!
(800) 831-2295
Includes Complete Price List & Free Product Info.

**SAME DAY SHIPPING ON MOST ITEMS
**ADOBE, SYMANTEC & MICROSOFT PRODUCTS AVAILABLE TO QUALIFIED STUDENTS, TEACHERS & SCHOOLS.
**SCHOOL PURCHASE ORDERS WELCOME.
**NO SURCHARGE ON CREDIT CARDS.
**IBM & MAC PRODUCTS AVAILABLE.

Visit our **NEW** Web Site!!
<http://www.swsonline.com>

Kidpix Studio.....	\$35
Kodak DC50 Digital Camero	\$649
Life Forms 2.1	\$199
Live Picture 2.6	\$199
Logic 2.6.....	\$229
M.Y.O.B 7.0	\$49
M.Y.O.B 7.0 w/Poyroll	\$90
Moc Academy Tutorial Video.....	\$35
MocLink+ Transloter Pro 9.7	\$95
Mod Scientist Collect	\$79
MagicMosk	\$79
Mask Pro 1.0	\$189
MothType 3.5	\$99
Motheomatico 3.0 Student	\$149
Motlob 5.0 Student	\$99
Movis Teoches Typing 5.0	\$45
Medio Cleoner Pro 2.0	\$249
MedioPoint 1.2	\$179
MeshPoint 3D 1.6	\$315
Mosaic 1.5	\$249
Movie Magic Scheduling	\$329
MovieFlo' 2.0.4	\$369
MovieWorks Interactive 4.0	\$79
Myrmidon 1.2	\$35
Netscope Communicator 4.0.1	\$29
Netscope Communicator Pro 4.0.1	\$49
Nisus Writer 5.0.1.....	\$85
Now Bundle 3.6.5	\$69
Now Utilities 6.7	\$55
ObjectDoncer 1.0	\$199
OmniForm 2.0	\$129
OmniPage Pro 7.0	\$329
Orbit Trackball	\$69
Overture 2.0.2	\$249
Point Alchemy 2.0	\$79
Painter 5.0	\$219
Photo/Grophic Edges	CALL
PhotoVisto	\$79
Pixor Showplace	\$139
Portfolio 3.0	\$69
Poser 2.0	\$79
PosterWorks 4.0	\$249
Presenter 3D 3.6	\$995
Printshop Dlx Ensemble Moc CD....	\$60
Quickeys 3.5.2	\$85
Rom Doubler 2.0	\$55
Roy Dream Studio 5.0	\$129
RubberBall Focus	\$199
SPSS 6.1 Student	\$99
Screen Coffeine Pro	\$75
Sculpt 3D 4.2	\$219
SoftWindows 95 4.0	\$199
SoundEdit 16+ Deck II	\$249
Speed Doubler 2.03	\$55
Spell Cotcher 1.5	\$49
Sportster 56K Ext.....	\$209
Spring Cleaning 1.0.1	\$49
Squlzz! 2.0	\$69
StoryBoord Artist 1.5	\$329
Studio Effects 1.0	\$399
Studio VisionPro 3.5.4	CALL
StudioPro 2.1	\$549
Stuffit Deluxe 4.0.....	\$69
Stylist 1.0	\$85
SuperCord 3.0	\$129
SuproExpress 56K Ext.....	\$189
Terro Formo Regional 1,2 OR 3	\$129
Terrozzo 2.0 w/TubeTime	\$79
Textissimo 1.0	\$69
The Teacher's Tool Kit	\$69
Total Xaos.....	\$129
Trockmon Morble	\$85
Tree ELAS Storm w/Tree Pointer	\$449
TypeCoster	\$79
TypeShop Pro	\$129
Typo/Grophic Edges 3.0	CALL
Video/Grophic Edges	CALL
Virtual PC	\$149
Wocom Art Z II 12x12 Ser Tablet.....	\$399
Wocom Art Z II 6x8 Adb Tablet	\$285
Wocom ArtPod II 4x5 Adb Tablet....	\$129
Wolkthrough Pro 2.6	\$229
WebPoge Graphics	\$69
WebPointer 2.0	CALL
WildRiverSSK 1.0	\$85
WordPerfect 3.5.1	\$69

The
SOFTWARE
Source

1-800-831-2295

1750 Brielle Ave, Unit A-2
Ocean, NJ 07712
PHONE (732) 695-2100
FAX (732) 695-9371
E-MAIL: SFTSWS@AOL.COM

STUDENT SOFTWARE DISCOUNTS!

Save up to **75% OFF** the Most Popular Software Available!

DTP • ANIMATION • WEB • BUSINESS • MEDICAL • CAD

Corel WordPerfect Suite 3.5



A market-leading wordprocessor at a price you can't refuse! Includes: WordPerfect, Netscape Navigator, MasterJuggler Pro, 150 fonts, 5,400 clipart images and 200 photos! (non-upgradeable)

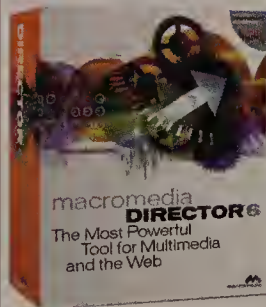
Great Deal!

SRP \$199

\$39⁹⁸

Includes electronic documentation.

Macromedia Director 6



New Director 6 is the most powerful authoring & production tool for multimedia and the internet. It's new drag & drop interface helps you create stunning multimedia presentations by easily integrating 2D & 3D graphics, animation, sound and video. Includes electronic documentation.

Director 6 Multimedia Studio \$639

\$319⁹⁸

Fractal Design Painter 5



New Painter 5.0 revolutionizes the world's best-selling paint software with hundreds of new features. From radical new looks to enhancements of time-tested favorites, the result is a creative standard for computer art.

Painter 5 Upgrade \$49⁹⁸

SRP \$399

\$199⁹⁸

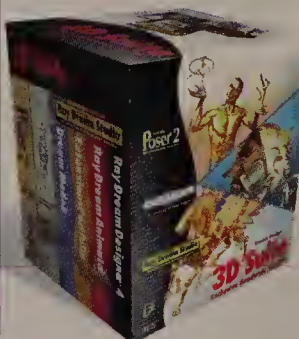
Painter 5 Digitizer Bundle

New Painter 5 revolutionizes the world's best-selling paint software with hundreds of new features, brushes, floaters & imaging effects. Bundled with the

Wacom ArtZ II, a 6x8" graphics tablet, a must for design professionals. Includes Wacom Erasing UltraPen.

\$469⁹⁸

Fractal Design 3D Suite



Includes 3 powerful programs into one superb 3D package. With Ray Dream Studio 4.1, Detailer and Poser 2 you can illustrate, model, pose, surface and animate your 3D creations.

\$198⁹⁸

ElectricImage Broadcast

Just for you - the animator working in television and multimedia! All the great features, quality and unrivaled rendering speed,

designed for broadcast resolution output. Render at warp speed!! **Bonus!! - FREE 3D MODELER*** - includes fantastic materials & texture controls which can be rendered at resolutions up to 32K by 32K!

Combined SRP \$3490

\$1349⁰⁰

A.D.A.M. Anatomy Suite

A great anatomy bundle!! Includes A.D.A.M. Comprehensive, the ultimate study partner for medical school anatomy and Practice Practical, the graduate & undergraduate study of human anatomy that will help prepare you for your lab practical examinations.

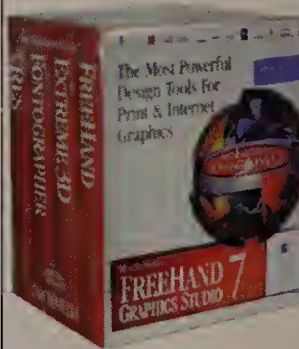
\$169⁹⁸

UMAX Astra 600S Scanner

Let's face it, you're getting Photoshop because it's the leading photo & design tool. But, how are you planning on importing all those images into Photoshop? How about using the UMAX Astra 600S flatbed color scanner. This powerful 300x600 dpi, 30-bit color scanner includes: Adobe Photodeluxe, Netcruiser, Netscape 3.0, Hot Dog and BBEEdit Lite.

\$209⁹⁸

FreeHand Graphics Studio 7



FreeHand 7 has the power you need to develop everything from simple illustrations to complex designs with a minimum of effort. Also includes Extreme 3D (3D modeling, rendering & animation), Fontographer (font development) and xRES (image editing).

SRP \$995

\$198⁹⁸

We have the widest software selection available! Thousands of titles available!



Call to receive a **FREE Student Software Guide** (44 page color catalog)

Instructors:

Call to receive a **FREE Classroom Kit** (box of catalogs, display & posters)

Journey will not be underpriced!

We will meet or beat any documented competitive price.

Available to qualified students, teachers, staff & schools.

Academic ID required with order.

OFFER: MW1197

Check out our weekly web specials:

www.JourneyEd.com

JOURNEY
Education Marketing

3D EYE • ADAM • Adobe • Autodesk • Borland • Claris • Corel • Digimation
ElectricImage • Fractal • Lightscape • Lotus • Macromedia • Microsoft
Newtek • Specular • Strata • Symantec • Umax • Wacom • and many more!

Windows Software Also Available!

AutoCAD Release 14 Bundle* \$1188.98
3D Studio MAX 2.0 with Character Studio* \$1188.98
AutoCAD Release 13 with AutoVision (non-upgradeable)* \$348.98
LightScape LVS 3.0* \$249.98
Quest Net+* \$695.00

*Offer for college/university U.S. & Canadian degree-seeking students only. 6 credit hours minimum. Proof of student status required with order. For personal/educational use only.

To order or to receive a **FREE Student Software Guide:**

1-800-874-9001

To order or to receive a **FREE Student Software Guide:**

1-800-874-9001

CIRCLE 425 ON READER SERVICE CARD

STUDENTS, TEACHERS, SCHOOLS SAVE UP TO 80%

ELECTRONIC

Image

Adobe, Microsoft, Symantec, Lotus, & Borland products available for qualified customers. School P.O.'s welcome. Prices subject to change. For a more complete listing ask for our catalog.

We'll Beat ANY Advertised Price!!!

3D Web Workshop 95	FileMaker Pro 3.0 119	Marianet 1.1 79
4th Dimension 6.0 299	Finale 3.7 249	Medio Point 1.x 199
AfterDork 4.0 39	Flosh 2.0 139	MiniCAD 7 319
Authorware 4.0 749	Fractal 3D Suite 199	OmniPage Direct 59
AutoCAD / Win3.x 179	Fractal Dobbler 2.0 39	OmniPage Pra 7.0 329
AutoCAD / Win95 329	Fractal Detailer 1.0 129	PageTools 2.0 69
Bond-In-A-Box 7.0 69	Fractal Expression 99	Pra Audia 6.0 299
Canvas 5.0 159	Fractal Painter 5.0 209	Professional 5.0 179
ClarisWorks 4.0 89	Fractal Poser 2.0 79	QX-Tools 2.0 69
Collage 2.0 59	Freehand 7.0 139	Ray Dream Studio 129
Conflict Catcher 4.0 59	Freehand Studio 7.0 199	Softwindows 95 269
CorelDRAW 7.0 129	HomePage 2.0 59	Studio Pro 2.x 549
CorelDRAW Ste 6.0 139	Infini-D 4.0 319	Stylist 1.0 75
Debabelizer Toolbox 219	Koi's Photoscape 49	SuperCard 3.0 129
Director 6 w/E-Doc 339	Koi's Power Tools 3.0 85	Vector Tools 2.0 69
Director MMS 6 649	KPT Bryce 2.0 119	Ventura 7.0 129
Director MMS Upgd 399	KPT Vector Effects 85	Web Graphics Suite 79
Encore 4.1.1 249	LightWave 3D 5.0 799	WordPerfect 3.5.1 39
Eye Candy 75	Logamotion 2.0 69	WordPerfect Suite 8.0 49

WebSite www.ElectronicImage.com • Fax (510) 798-2464

TOLL FREE 1-888-3-EDU-7-SOFT

CIRCLE 480 ON READER SERVICE CARD

Finally! Windows 95 and Macs Share Files and Printers Both Ways

Workgroups and small offices can now operate as efficiently as an enterprise with **PC MACLAN for Windows 95**. Low cost, plug and play installation, Network Neighborhood and long file name support, are just a few of the features that make sharing files, volumes and printers between Macs and PCs a snap.

"For peer-to-peer networking . . . PC MACLAN 6.0 is the only choice."

— Macworld - Nov. '96

Create your own network or complement almost any pre-existing LAN. Sharing information between Windows 95 and Macintosh users is as easy as working off your local hard drive. Print jobs go to the printer of your choice regardless of its location on the network.

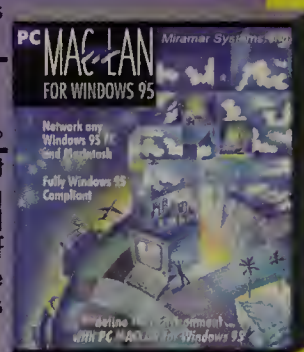
For ordering or information:

800-862-2526

e-mail: sales@miramarsys.com

Web: www.miramarsys.com

Please visit us at these upcoming shows:
Seybold Seminars Oct. 1-3 — Booth # 2428
CUE Conference Oct. 16-18 — Booth # 902



NOVEMBER 1996
Macworld
★★★★★
7.5

Miramar Systems, Inc.

CIRCLE 431 ON READER SERVICE CARD

MUSIC for the MAC

We sell the full range of music products for the Mac. Hard Disk Recording Specialists.

Best prices & customer support in the business!

Mac BEAT!

1314 Rufina Cr. Ste. #A4
Santa Fe, NM. 87505

www.macbeat.com

FREE CATALOG

505-473-3434

Fax 505-473-4647

1-800-MAC-BEAT

Graphics WAREHOUSE

FULL-BLEED TABLOID COLOR

LOW-PRICED AT ONLY \$4599

ColorMasterPlus XF



Regardless of your company's size this thermal printer will give you the professional-quality output you need. It does it quickly, easily and economically.

800-896-0975

CIRCLE 419 ON READER SERVICE CARD

Detailed Networks in Minutes with NetDraw® 2.0!

With over 330 professionally drawn images, NetDraw® 2.0 gives users immediate access to clip art symbols for LANs, WANs, computing, PCs, telephony and patching and cabling. Also included are flow charting symbols as well as mapping graphics to depict your networks geographically. Available now for just \$129.95, NetDraw® 2.0's complete clip art library is easily imported into most Macintosh applications. Call 800-643-4668 to order your copy today!

NetDraw

Clip Art for Building Networks®

CIRCLE 461 ON READER SERVICE CARD

CADMOVER v.5

What good is a built in translator if it doesn't work?

You've worked hard and now it's time to use those files in another program. You try to import them & all you get is garbage. Not with CADMOVER. For over ten years we've been helping people beat their deadlines, no re-drawing, no touch-ups.

File formats: DWG, DXF, EPSF, PICT, CGM, IGES, HPGL, STL, MiniCAD DDES2, etc... Internal Features: scaling, 2D/3D views, font mapping and more. With 17 decimal place accuracy redrawing is a thing of the past.

voice 800-579-2244 • fax 540-839-3489 • www.kandusoftware.com

KANDU
software corporation

CIRCLE 402 ON READER SERVICE CARD

More Serial Ports for Your Mac!

Better than a Switch or Juggler

- Provides simultaneous use of ports
- More stable than port sharing products
- Data rates up to 230 Kbps
- PCI serial cards available in 2 or 4 port versions
- For use with Comm Toolbox savvy software

Your Satisfaction is Guaranteed

- 30 day money back guarantee
- 5 year warranty
- SX-2 just \$229 SX-4 only \$329
- Free FedEx 2 day shipping

© Copyright 1997, KEYSpan is a trademark of InnoSys Inc. Other brand names are trademarks or registered trademarks of their respective holders.

Call 800-986-9146 to Order
Order from FedEx: 7am-9pm M-F (CST)
Authorization #: i35 • Source code: 25F

KEYSPAN

(510) 222-0131 www.keyspan.com

**SX-2 Only
\$229**



CIRCLE 455 ON READER SERVICE CARD

BIGGY



BIG *animated* cursors
utility, with fat caret,
QuickPoint,
and much more...\$99

1-800-RJCooper

714-661-6904 rj@rjcooper.com

Free demo (and other items for people)

CIRCLE 454 ON READER SERVICE CARD

"A Macworld never goes by
without me checking
to compare prices.
I always look to see
what I need is there."
—Owner,
Computer Consultants

Macworld
SHOPPER

PowerUP™ Processor Upgrade Board

200, 225, 233, 250MHz

Dual 400, 450, 500MHz

Apple 30 day money back guarantee

Apple Two year warranty

Apple 100% guaranteed compatible

Toll Free 1-888-373-3403

TOTAL IMPACT

805-987-8704 FAX 805-484-9469 www.totalimpact.com

CIRCLE 441 ON READER SERVICE CARD



Surprised at your **web hosting** rates?

Then call ValueWeb today, the world's most affordable web hosting service!

**\$19⁹⁵
MO**

No Minimum
Contract!

- Domain name registration provided (http://www.your_name.com/)
- Access to our SSL secure server
- Your own CGI-bin directory
- Anonymous Virtual FTP
- E-mail forwarding
- Your own FTP account
- T3 connection to the Internet
- 1000 Mb of data transfer per month
- Daily tape backup

- Choice of UNIX and Microsoft® Front Page
- Detailed web usage statistics
- Auto E-mail responders
- 25 Mb of disk space
- Truespeech® server support included (real time audio)
- Same day setup
- POP3 E-mail accounts
- Ask about our reseller program!

ValueWeb

1-800-WEB-HOST-U

The #1 Choice for Professional Website Developers.

**30
DAY
MONEY BACK
GUARANTEE**

Save \$10 When You Register Online! • www.valuweb.net • E-mail: sales@valuweb.net

CIRCLE 449 ON READER SERVICE CARD

RE-WRITE **CD-RW**
Technology
Is Here!

NEW!

-2X write/6X Read
-ReWrite up to 1,000 times!
-Great Replacement to Tape Backup

AVD
CD RECORDERS -INTERNAL

\$499

RECORD **4x/6x**
write read
Recordable CD

-2MB Cache Buffer
-250 ms access speed
-Yamaha inside, Great for Audio
-FREE software, cables & 1 piece of media!

AVD
CD RECORDERS -INTERNAL

\$579

\$379 **SONY** **\$529**
2X/6X write read 4X/4X -INTERNAL

AS LOW
AS \$2.99
EACH!

Now lower
than ever!
How about
\$2.99 each
for GOLD!

CD Recorders	int.	ext.
AVD 4X/6X Yamaha	\$579	\$649
AVD 4X/4X Teac	\$529	\$599
AVD 2X/6X Sony	\$379	\$449
AVD 2X/6X ReWriteable	\$499	\$579

RECORD **The Original**
Jaz /CD-R
Duo!

EXTREME

-Keep your workspace clean with the Extreme
-Simple Drag & Drop from Jaz to CD-R
-Complete w/ software, cables & media for Jaz & CD-R!

-SONY 2X/6X

\$799

PILASSO **LABEL**
Print perfect
color directly
to your CDs!

PILASSO
CD COLOR PRINTER

FREE 10 PIECES
OF PRINTABLE MEDIA!

-Complete CD-R Printing Solution
-Quick Dry Ink, Not Tacky!
-Bright, Vibrant Colors
-Accepts Most Printable Media

\$1199

JAZ/CD-R Duo	ext.
JAZ 1GB & 4X/6X Yamaha	\$999
JAZ 1GB & 4X/4X Teac	\$979
JAZ 1GB & 2X/6X Sony	\$799
Fast Audio Capture & CD Copy	
4X Write/6X Read/12X Read	\$999
4X Write/6X Read/20X Read	\$1,099

SYJET/CD-R Duo	new	ex
JAZ 1GB & 4X/6X Yamaha		\$1,099
JAZ 1GB & 4X/4X Teac		\$1,049
JAZ 1GB & 2X/6X Sony		\$899

OTHER	int.	ext.
12X Read - Plextar CDROM	\$239	\$299
20X Read - Plextar CDROM	\$269	\$349
JAZ 1GB Drive + Cartridge	\$299	\$399
SYJET 1.5GB Drive + Cart.	\$399	\$499

RECORD **SyJet 1.5GB**
Drive & CD
Recorder Duo!

jetStream

-Partition your SyJet
cartridges to burn 2 CD's from each
-Utilizes award-winning Syquest Technology
-FREE software, cables & media for SyJet & CD-R!

-SONY 2X/6X

\$899

DUPLICATE **Standalone**
50-CD Duplication
\$5999

Standalone **new**
150-CD Duplication
Available with two 4X Recorders
\$6599

-Simple set-up & operation!
-Complete with 50 Caddys!
-Press one button & leave!

record while
you sleep!

Record 24 CD per Hour - FAST!
Standalone, with 6 CD recorders! **call**

MedioFORM CD-2-CD
Standalone, duplicate to any format **\$2699**

MEDIA			
128MB Optical	\$9.99	SyJet 1.5GB	\$119
230MB Optical	\$9.99	Syquest* 44MB	\$33
590MB Optical	\$29.99	Syquest* 88MB	\$35
640MB Optical	\$27.99	Syquest 135MB	\$21.99
650MB Optical	\$29.99	Syquest* 200MB	\$49
1GB Optical	\$89.99	Syquest 270MB	\$55
1.2GB Optical	\$26.99	ZIP 100MB	\$13.99
1.3GB Optical	\$37.99	JAZ 1GB	\$89
2.3GB Optical	\$65.99	DLT 10/20GB	\$39.99
2.6GB Optical	\$65.99	DLT 15/30GB	\$47.99
CD-ReWriteable	\$25.99	DLT 20/40GB	\$106.99
* = Syquest Compatible			

SOFTWARE	
CD-DA: Pro Audio Mastering	\$359
CD Copy: Copy any data/audio CD	\$99
Toast 3.5: #1 CD Writing Software	\$99
Toast/CD-Copy/CD-DA: Mega Pack	\$449
M-Pack: MPEG Encoding Software	\$399
Masterlist CD: Pro Audio CDs	\$499
Intech CD ROM Speedtools	\$20
FWB RAID Toolkit	\$99
PRO Tools: multitrack digital audio	\$699
Macintosh Audio Capture Card:	
Audiamedia III: PCI Audio I/O Card	\$699

ORDER TOLL FREE! Product Prices and Availability Subject To Change.

800.555.5551

Open Mon - Fri 7 a.m. - 6 p.m. (PST) • international phone 714-974-5551 • FAX 714-279-1690

MEDIASTORE
www.mediastore.com

Ad Code: BA-111

Breakthrough

In Keyboard
Monitor
Switches

Multi Platform &
On-Screen Display



SEE US AT NETWORK + INTERO
October 8-10,
Atlanta, GA, Booth #7622

BREAKTHROUGH the clutter of multiple keyboards, monitors, and mice with this latest INNOVATION from Rose. This switch has every feature you asked for:

Switches several servers or computers to a single monitor, keyboard, and mouse

Supports any mix of PC, Apple, Sun, RS 6000, HP 700 series, DEC Alpha, SGI, or other computers from any keyboard or mouse

Front panel has keypad for easy selection of computers and configuration

Front panel display shows computers name and other information

Command to switch can come from keyboard, front panel, or RS232 port

Simple to use keystrokes switch computers for fast and easy control

Built in daisy-chaining supports up to 256 computers

Flash memory for future upgrade of features

Easy to use **OverView™** system gives control and status with on-screen graphics

Many other features!

CALL FOR A FREE CATALOG:

- ◆ Keyboard/Video Control
- ◆ Print Servers
- ◆ Data Switches

800-333-9343

VISIT OUR WEB SITE AT WWW.ROSEL.COM



10707 STANCLIFF ROAD HOUSTON, TEXAS 77099 TEL 281-933-7673 FAX 281-933-0044

CIRCLE 442 ON READER SERVICE CARD

IRISPEN

The Smallest and most Portable scanner

Pen-sized portable Line Scanner with powerful text recognition (OCR) reads any printed information and puts it directly into your application, be it notes in a word-processor, addresses in a database, figures in a spreadsheet etc.



3 VERSIONS AVAILABLE

IRISPen Translator™

(Available for PC Only)

- inputs printed text directly into your application
- translates German, French or Italian to English and vice-versa (English to Japanese available as well)
- contains a speech module to improve your pronunciation

\$399

Product of the Year



SVM

IRISPen 3.0 Executive™

- inputs printed text directly into your application in 26 languages
- recognition of all popular barcodes, handprinted numbers
- contains a speech module reading to you as it scans

\$379



ID Automatic News



Imaging Editors' Choice

IRISPen 3.0™

- inputs printed text directly into your application in 26 languages

\$279



IMAGE RECOGNITION INTEGRATED SYSTEMS
Contact us at
(800)447-4744 or
(561)395 7831
or fax us at
(602)507-3418
Email us at
iris@hooked.net
and visit our site at
www.irisusa.com

CIRCLE 478 ON READER SERVICE CARD

DISCOVER A NEW WAY TO SHOP!

Find exciting product offers at the Mac Shopper on



The Essential Macintosh Website.

www.macworld.com/buyers/shframed.htm



Contact your Macworld sales representative for details.

(800) 888-8622

Custom ULTRA SCSI Products

SCSIVue™ Active Terminator

- From: **\$59**
- Benefits:**
- Improves SCSI Bus Performance
 - Less Errors, More Reliable Data Transfer
 - Diagnoses Problems • Analyzes Signal Quality
- Features:**
- Active Regulation • Fast 50 & Fast Wide 68
 - Status Indicators • Gold Contacts

Active 2-1 SCSI Switch / Repeater

- From: **\$599**
- Benefits:**
- Up to 14 Devices to 1 Computer
 - Share Devices Between 2 Computers
- Features:**
- 2-1 Active Digital Switch/Repeater
 - Regenerates SCSI Signal for Long Runs

Gold Diagnostic Adapters

- Styles:**
- 68 Pin Drive to 50 Pin IDC (runs wide drive as narrow)
 - 68 Pin External Adapter to 50 Pin (converts Host Adapter)
 - Gender Changers both 50 and 68 pin (all combinations)
 - Adapters with partial termination for 68 to 50 converters
- From: **\$39**

Gold External Ultra SCSI Cases

- Ultra SCSI Custom Teflon Cable Available
- Custom Enclosures in 1 Day for Raid & Arrays



SCSIVue™ Gold Cables

- From: **\$39**
- Features:**
- Triple Shielding (Unique Design)
 - Double Gold 20u" Plated Connectors
 - Diagnostic Indicators • Large Ferrite Filters
 - Extra Heavy 26 Gauge Wire • 100 Styles in Stock

Custom Teflon® Internal Cables

- From: **\$39**
- Benefits:**
- Less Errors, Ultimate Performance
 - Silver Wire Improves Signal Quality
- Features:**
- Perfect 90 Ohm Impedance • Custom in 1 Day
 - Triple Pronged Connector - Gold contacts Silver Wire

Active Digital SCSI Repeater

- From: **\$149**
- Benefits:**
- Models for all SCSI types
 - Fixes SCSI Cable Problems
 - Doubles Cable Length (up to 18')

Teflon® 90 Ohm External Cables

- From: **\$159**
- Benefits:**
- Ultra SCSI 40 MB/s operation
 - Fixes Ultra SCSI Cable Problems
- Features:**
- Perfect 90 Ohm Impedance Match
 - Triple Pronged Connector With Gold contacts

SCSI Cable Tester - LED Readout

This Digital SCSI Cable Tester can test all the popular cable styles for opens, shorts, and unreliable operation. Battery powered for easy use.

- Three models to choose from:
- 50 pin IDC
 - 50 pin Centronics
 - 68 pin MicroD
- From: **\$49**

The SCSI Solution Company
Ph: 510-471-6442 Fax 510-471-6267
3101 Whipple Rd Union City, CA 94587
Online Catalog at: www.scsiopro.com

CIRCLE 408 ON READER SERVICE CARD

BUY 5% OVER DEALER COST

All Major Brands of
Hardware & Software

*We'll beat any price
in this magazine.*

We will not be undersold.

No lower prices anywhere.

Lowest prices allowed by law.

Huge discounts.

Shop and compare.

Nobody can match our prices.

[YOU GET THE IDEA]

HOW DO WE DO IT?

By taking your order over
the internet, our secure
transaction server can
process your order more
efficiently. Our reduced
overhead allows us to pass
the savings on to you!
It's that simple.

Visit our website for
complete details.



www.fivepercent.com

Another Reason why Studiotronics Is Your Source for High-end Gear!

Affordable Full-color Printing, Straight from your Desktop

Prints on both sides
of the page!



\$3,999

With 8 meg of RAM (600 dpi)

This is truly the best color laser printer that you can buy. With more features than units costing twice as much, this is the first desktop color laser printer that can print on both sides of a page.

At 1200 dpi, twice the resolution of most color copiers, you can reproduce photographic images with more detail than possible before on a color laser printer.

With the optional copystation feature you can turn your color laser printer into a color copier.

Options

1200 dpi Upgrade 40 meg RAM	\$ 1000
Ethernet Network connection card	495
CopyStation Adds color copier functionality	1695

Processor Upgrades



604e Processor Cards

180 MHz w/MVP*	\$ 375
200 MHz w/MVP*	549
225 MHz w/MVP*	725
233 MHz w/MVP*	875

*Allows fine tuning of processor/bus speed

Epson Stylus 3000

- 1440 dpi Photo-Quality Printing
- Adobe Postscript RIP
- Individual CMYK Ink Cartridges
- Prints 16 x 44"



\$1,729

Print Your Own Posters with the Encad Cromia24!



\$2,175

- 300 dpi
- 24" wide roll feed
- Automatic Cutter
- Refillable Ink Cartridges

Turn to Studiotronics for all your high-end graphics needs. We've built our reputation on providing reliable information to computing professionals.

Authorized dealers of:

- Avid
- Media 100
- Rhino
- Encad
- Electric Image
- Lightwave
- Scitex



studiotronics

800-653-1265

Minneapolis, MN 612/321-9400

www.studiotronics.com

All prices reflect a cash discount. Any other method is 2% higher.

MACWORLD SPECIAL!

A special welcome to MacUser Readers.

MITSUI Recordable GOLD III CD-Rom media.

The best CD-R's in the world,
backed by the only lifetime warranty
in the business.

MACWORLD SPECIALS

- 10-disc sample pack \$29.99
- 100-disc case \$249.99

CALL AMC TODAY before these
specials fade away. Mention ad code
MW11C to get the deal.



888-558-3187

or fax: (425) 861-8391

EXPERIENCE THE AMC QUALITY DIFFERENCE.

AMC. QUALITY. INTEGRITY. EXPERIENCE.

AFFEX HARDCOPY COLOR INK JET PRINTER

The most effective CD
printer. Print's CD's,
Jewelcase liners and
other media in brilliant
1440dpi color.

Call today for:

Best Price!
**ALL
NEW!**

Burn up to 50 CD's per
hour with AMC's
complete selection of
multi-drive recorders
and duplicators.

YAMAHA
SYSTEMS TECHNOLOGY

YAMAHA 4X6 CD-R

The fastest CD recorder
on the planet! Available in
internal, external versions for PC
and Mac. Tray or caddy disc
loading. Call for current pricing.

AFFEX
COLORJET

The ultimate CD-ROM Mastering
solution. Custom-built to your
specifications with 2x6 or 4x6 CD-R
drives, Jaz and/or A/V Hard Drives.
All kits include Adaptec Toast or
CD Pro Mastering software.

AMC's CD DUPLICATORS

Prices start at:

\$2999.99

AMC 2-HI JAZ/CD-R COMBO

Prices start at:

\$899.99
AMC Experience the Difference.

ADVANCED MULTIMEDIA CONCEPTS

P.O. Box 3456 Redmond, Washington 98073-3456 • 888-558-3187 www.mwm.amc-direct.com

CIRCLE 468 ON READER SERVICE CARD



EE-509F



EE-507F



EE-504F

We have a full line of
external enclosures
from one 3.50" bay HH
to 20 bay 5.25" HH.


DataPort™
Removable Storage Module

Removable Storage Modules are the solution when it
comes to data security and data sharing.
These RSMs feature SCSI ID's, fan and lockable keys.
Any 3.50" SCSI or IDE HDD compatible.

WETEX INT'L (USA) CORP.

Tel: 626-854-6600 Fax: 626-854-6611
DEALERS PLEASE CALL FOR QUANTITY PRICING
LOOK US UP AT <http://www.wetex.com>
OUTSIDE CALIFORNIA ORDER TOLL FREE ONLY
1-800-759-3839

See us at
Comdex
Booth # M181
Sands Expo

CIRCLE 406 ON READER SERVICE CARD

DIGITAL VIDEO MOTION GRAPHICS

Professional systems tweaked by professionals.

Complete Media 100 Line

Ultra SCSI • SSA • Fibre-Channel
Apple • Daystar • ICE • PowerCC
Boris Effects • DigiEffects • FormZ
Ultimate • After Effects

BYOS (Build Your Own System) at our web site.

www.intelligentmedia.com

Customize your own configuration

Expert Service and Support

Intelligent Media
www.intelligentmedia.com

Call for Special Educational Pricing
Corporate and Government PO's Welcome
Trade names and trade marks are the property of their respective owners

800 366-9622

CIRCLE 429 ON READER SERVICE CARD

Active Network Solutions


1(800)371-0919


PowerBook 3400c/240

16/3gig/
12x-CD/floppy
12.1" active
matrix display
33.6 modem

**only
\$138
per month**

DIMMS

168 pin, 2K, 60 ns
16 MB.....\$65
32 MB.....\$115
64 MB.....\$229

SIMMS

72 pin, 2K, 60 ns
16 MB.....\$54
32 MB.....\$99

FOR A VAST SELECTION OF MACS,
MAC CLONES AND PERIPHERALS

call (800) 371-0919 • (310) 764-4357

VISIT OUR WEB SITE AT:

<http://www.activenetwork.com>
or E-MAIL: actnetwork@aol.com

CIRCLE 420 ON READER SERVICE CARD

www.macworld.com/buyers/shframed.htm

Mac shopper

Want bargains
online?

Bookmark the
Mac Shopper at:

Macworld Online

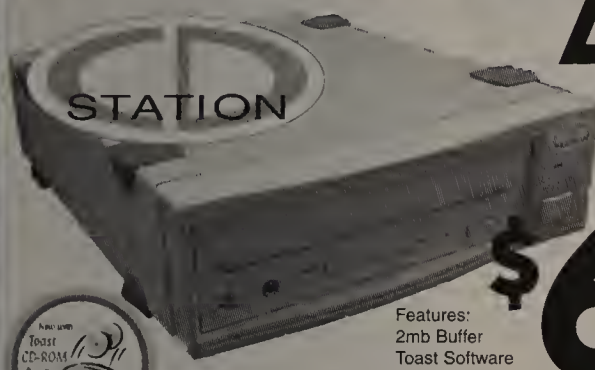
Contact Macworld on
how to advertise.
(800) 888-8622

CD-R & CD-R Recorders

CD-Recordable

4x/6x

Write Read



Features:
2mb Buffer
Toast Software
Yamaha Electronics
Cables & 2 CD-Rs

\$629

INTERNAL

SONY

\$2.99

Minimum 100
Custom Printing
available!



PLACE YOUR ORDER ON THE WEB WITH OUR NEW SECURED WEBSITE!

MEDIA SUPPLY
610-458-9100 • Fax: 610-458-9464

800-944-4237

www.mediasupply.com



CIRCLE 413 ON READER SERVICE CARD

Käblit[™] Security

NOW!

STOP COMPUTER THEFT!

IN THE OFFICE — ON THE ROAD

- Secure computer or Powerbook[™] to desk, table, etc.
- Protect data
- Lifetime warranty

MacKäblit[™] II - List \$49.95



Fixed Location

Käblit[™] T-Lock - List \$39.95



Any Location

Quick And Easy To Install
Travels With Your Powerbook[™]

Padlock Security
Provided by
Master[®] Lock



Secure-It

Order now — Call 800-451-7592...

18 Maple Court, East Longmeadow, MA 01028, USA phone 413-525-7039

The particular Master[®] Lock Trademarks used are trademarks of the Master[®] Lock Company and are used by Secure-It, Inc. under license.

CIRCLE 424 ON READER SERVICE CARD

Media priced as low as
\$2.79 each with the
purchase of any CD-R !!

Nobody sells for less than the Copy Cats!!

Order by calling toll free or visit our online catalog at www.copycatshop.com

CD Recorders

2x2x6 Rewritable	\$529
2x6 Phillips	\$299
4x4 Teac	\$499
4x4 Mitsubishi	\$509
4x6 Yamaha	\$579
4x8 Panasonic	\$539
Add \$50 for external	

CD-R Duos

Jaz2CDR (4x4)	\$879
CD2CDR(12x/4x4) ...	\$819
DAT2CDR(4x4)	Call
All Duo prices external	

CD-R Towers

Call for price & config.

Media (CDs minimum 10)

Media One	\$2.99
Name Brand	\$3.49
CD-RW	\$19.99
Jaz Cartridges	\$89.95

Software

Copy Cat(multi CD) ...	\$199
Toast	\$99
Gear	\$59



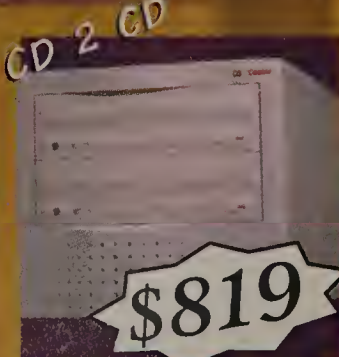
Yamaha 4x6
\$579



Jaz 2 CD
\$879

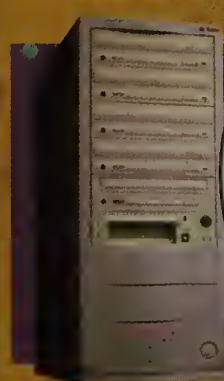


Panasonic 4x8
\$555

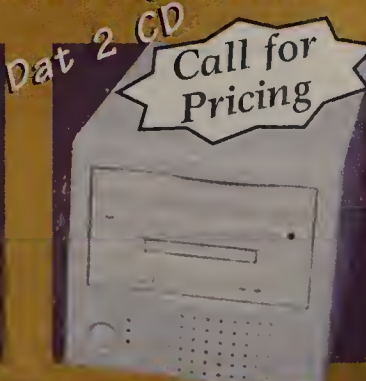
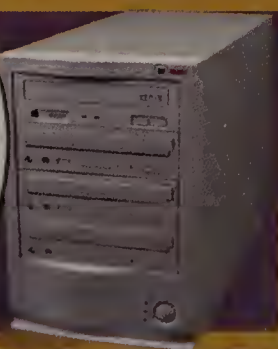


CD 2 CD
\$819

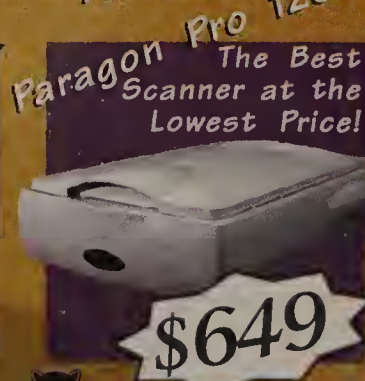
Burn It, Dupe It, Copy It, Scan It...But Buy It From The Copy Cats!!



CD Copiers
We'll build
the size you
need.
Call for prices and
configurations.



Dat 2 CD
Call for
Pricing



Paragon Pro 1200
The Best
Scanner at the
Lowest Price!

\$649

Order Toll Free **1-888-663-3121**

Open Mon-Sat 7 am - 7 pm 760.510.9880 Voice 760.510.9888 Fax

Copy Cat Shop
A DIVISION OF **Media One**

CIRCLE 475 ON READER SERVICE CARD

Systems & Peripherals

Peripheral Products Magnetic Media

Macworld

SHOPPER

Diskette CONNECTION

Since 1981

1-800-654-4058

CD-R • CD-RW
SyQuest • Zip • Jaz
PD Drives & Media
Mogeto-Opticals
4mm • 8mm
Diskettes

Inkjet Cartridges
Laser Toner Cartridges
Specialty Papers • Labels
Ribbons

Medio Storage
CD Accessories
Cleoning Products
Mouse Pads • Wrist Rests

osaka® ➔ \$7⁵⁰
128MB Magneto-Opticals

lomega® ➔ \$84⁹⁵
1.0GB Jaz Cartridges
Call for Zip Disks

SONY® ➔ \$13⁹⁹
DDS-2 Cartridges

SyQuest® 88mb ➔ \$36⁰⁰
Compatible 88MB
cartridge from Maxell

Verbatim ➔ \$20⁷⁵
Call for CD-R & Optical.
CD-ReWritable, qty. 5+

Visa/MC/Discover • ph 405-789-0888 • fax 405-495-4598 • 7-7cst, M-F

www.disketteconnection.com

CIRCLE 485 ON READER SERVICE CARD



20" Sony Color BLOWOUT MODEL!

Model GDM1960 SuperFine
Pitch Trinitron Tube .28 DP

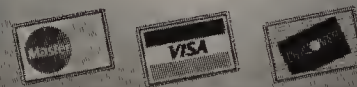
• 1 Year Warranty
1024 x 768 Refurbished

• Tilt Swivel Base
Only \$649!

We also carry 17" Sony
Monitors as low as \$299

Call for
Details 800-390-7020

181 Salem Street, Malden, MA 02148



CIRCLE 438 ON READER SERVICE CARD

MacPOWER

Sales & Service, Inc.

BUY • SELL • TRADE
UPGRADE • REPAIR

New • Used • Refurbished

- Powerbooks
- PowerMacs
- Performas
- Quadras
- Mac II's/LC's
- Monitors
- Printers
- Peripherals
- Ram
- Parts

Free Diagnostic

Call now for best prices!

888-275-POWER
TOLL FREE 7 6 9 3

TRADE YOUR MAC FOR A NEW ONE. We Pay Top \$\$\$ For Your Mac & Mem.

Competitive Leasing
Email: cgn @ cgnusa.com

WE BUY • SELL • TRADE

We custom configure
and test your system.

PowerMacs Powerbooks Upgrades Demo Macs Memory Parts

9600 300 MHZ MP	3890
9600 200 MHZ	2590
8600 300 32-4Gb-CD	3380
8600 200 32-4Gb-CD	2490
8500 132 MHZ	1650
7300 180 MHZ	1745
7200 120MHz	1090

Call For 235 & 300 Mhz

4400 200MHz	1245
7200 /75/90/120	CALL
Call for config. not listed	

3400C 240 Mhz	4150
3400C 200Mhz	3480
1400C 16-1Gb-CD	2190
1400cs 12/750	1545
5300c 16/750	1350

Call for New PB 3400

Demo Powerbooks

PB 180c Color	850
520C / 540C	799/1095
5300 16/500	899
145 - 170 -180c-165c CALL	
5300CS 8/500	1040

Same day Upgrade No down Time!!	
Prf 63X to 6300 603-100Mhz	595
PM 7200 to 7600	750
8100 to 8500/180Mhz	1525
7500 to 604-150/200 399/799	
Upgrade to 200 or 180 Mhz CALL	
CALL for PowerBook Upgde	
7100/ 80 to 7500/ 100	650
P8 520 / 540 to 167 MHZ	495
Q800-840 to 8100	490
P8 5300 to 3400/CD	CALL
Call for Upgrades not listed	

8500 132/120	1590 / 1490
8100 /AV	899
8100/110 16/2GB/CD	1090
Q 800/ 840/950	450/550
7100/80	650
15" / 17" Monitor	240 / 460
PM 7500 /7600	1150/ 1325
Laser Printers From	290

Performa

6200- 16/1Gb CD	690
Call for latest prices.	
6320/6400/4400/5212/575	

Dimms 16/32/64	75 /135/220
30 Pin 1/ 4/16	8 / 23 / 80
72 Pin 8/16/32	32 /68 /130
2X - 4X-8x CD	50 /95/155
HD 1.GB - 2.GB-4GB	Call
lomega Jazz Drive	339
Global Village Modem	139

Call For:

Monitors, Printers, Scanners.
All Apple Parts In Stock and
We do Advance exchange.
Leasing Available.

Floppy 1.44	75
POWER SUPPLIES	CALL
AV Card	\$175
Logic 8d 180/ 200Mhz	899/ 999
Call for Logic Boards & more	

Computer Graphics & Networking

All prices Reflect cash Discount
Visa, Mastercard, Amex Accepted
<< Prices are subject to Change.>>

TEL: 310-441-4771 10922 W. Pico Blvd. Los Angeles, CA 90064 Fax: 310-441-4770

CIRCLE 432 ON READER SERVICE CARD

voice: 510-689-9488 fax: 510-689-9487

PRICES & QUANTITIES SUBJECT TO CHANGE

Place Your Orders OnLine!

1-888-447-3728 • MacResQ • www.macresq.com

Toll Free

New!

Power

Computing

PowerBase

180

16/1.2Gig/8xCD

\$999

Mac OS

PARTS, PARTS, PARTS!!	
CD 300i (caddy) Internal	\$25
CD 300i+ (tray) Internal	\$49
CD 600i+ (tray) Internal	\$69
CD 1200i (tray) Internal	\$129
mounting kits OR external cases avail.	
Manual Inject floppies (661-0121)**	\$49
Auto Inject floppies (661-0474)**	\$79
132 mhz PM processor upgrade cards	\$69
150 mhz PM processor upgrade cards	\$129
PowerBook Duo kybds (rev. F)-exch.	\$39

New! CD 1800i \$229
12x, internal

Apple Stylewriter II

\$69

w/ ink & cable!

Apple Stylewriter

1200 \$89

Apple Personal LW 300

* 300 DPI

* 4 PPM \$299 w/toner

NEW! factory sealed

POWERBOOK

Active Matrix Screen!

5300 CE

32/1.1 GIG

\$1799

revision B

We have 3.5" and 2.5" internal scsi hard drives.....call for pricing and availability!

POWER SUPPLIES:**

LC thru Q 605

Mac II cx/ci / Q 700

Q 800 / PM 8100

PM 8500 / 9500

PERF. 630 thru 6300

Duo Dock

Q 900 / 950

PM 7100 (EXCH. ONLY)

PM 6100 (EXCH. ONLY)

II SI

\$19

\$49

\$99

\$109

\$69

\$69

\$99

\$69

\$89

\$49

What a Deal!

PowerMac

6100/66

24/350/cd/kybd

\$599!

MR

Mac-Res-Q.

25% restocking fee. ALL ITEMS REFURBISHED UNLESS NOTED AS NEW • All Parts Sold With a 90 Day MacResQ Exchange Warranty • ** = Exch. Required For Orders of 10 or Less • All Major Credit Cards With NO Surcharge.

CIRCLE 437 ON READER SERVICE CARD



Performa 6116 8/700/CD- \$749

Includes CPU, Apple Color Monitor, Kbd & Mouse

Mac

S · A · L · E

INTERNATIONAL



Centris 610 8/230/CD- \$659

68040 20MHz Complete System
Includes: Apple Color Monitor, Kbd & Mouse

PowerComputing Power 120

PowerPC 601 at 120 MHz. 3 NuBus Expansion Slots, Level 2 cache, Built-in Video Support & Ethernet (Similar to Apple PowerMac 8100)
Included: Ext. Keyboard, Mouse, Mouse Pad, Bundled Software (ClarisWorks; Intuit's Quicken; Now Software's Now Utilities, Now Contact, Now Up-to-Date, FWB's Hard Disk Toolkit & CD-ROM Toolkit, 250 Bitstream Type 1 and Tru Type Fonts; America Online)



(Other config. available)

8/1GB/CD Desktop or Tower Model:

Only \$699

Complete Bundle with 15" Monitor

Only \$925

Desktop CPU's

Mac LC	4/40	\$149
Mac IISI	5/80	\$229
Centris 610	8/230/CD	\$429
Centris 650	8/230/CD	\$449
Quadra 610	8/230/CD	\$449
Quadra 650	8/500/CD	\$499
Quadra 700	8/350	\$449
Perf. 5200/75	8/800/CD	\$799
Perf. 6116	8/700/CD	\$549
Perf. 6118	8/230/CD	\$529
7200/75	8/500/CD	\$699
7200/90	8/500/CD	\$749

Desktop CPU's

Mac II	4/0 (no mouse)	\$49
Mac IICx	4/80 (no mouse)	\$149
Mac IICx	4/80 (no mouse)	\$149
WGS 80	8/1G/CD	\$649
WGS 80	8/500/CD/DAT	\$749
WGS 95	16/500/DAT	\$749
WGS 8150	8/1G/CD/DAT	\$1099

Printers

LaserWriter Pro 810	\$1299
Color StyleWriter 2200/2400	\$99
Laser Select 300/310	\$229/\$299

Monitors

Performa Plus Display	\$229
Apple 13" RGB	\$229
Apple 14" Color Display	\$229
Apple 14" Color w/Touch Screen	\$249
Apple 14" AV Display	\$229
Apple 14" MultiScan	\$249
Apple 15" MultiScan	\$299
Apple 17" MultiScan	\$499
Apple 1710 AV Display	\$599

BUY • SELL • NEW • USED • REFURB

Products are Refurbished/Used unless specified
Limited Qty/Prices subject to change
Prices represent a Cash Discount
Returns at Mgmt discretion/15% Restocking fee

1-800-729-7031

1150 W. Alameda Dr, St #1&2, Tempe, AZ 85282

FAX 602-858-0811

Web: <http://www.macsaleint.com>
E-mail: info@macsaleint.com

Closeout Corner: Check our website for special pricing on one-of-a-kind, overstocked & discontinued products

CIRCLE 401 ON READER SERVICE CARD

Free Scanner w/ C600
SuperMac C500/180 \$925

SUPERmac[®]
Computers that Work the Way You Do.

PowerComputing



S900

S910/250 64/4/CD	\$Call
S900/250DP 64/4/CD/Zip/E100	\$6900
S900/200DP 32/2AV/CD	\$3270
S900/180DP 32/2AV/CD	\$2970
S900/250 32/2AV/CD/Zip/E100	\$3770
S900/233 32/2AV/CD	\$2990

C500/600

C600x/280 32/4/CD/10B-T/33.6	\$2390
C600x/240 32/3/CD/10B-T/33.6	\$1990
C600/240 24/2/CD/33.6	\$1490
C600e/200 32/2/CD/Zip/10B-T	\$1690
C600/200 16/2/CD/33.6	\$1290
C600/180 16/1/CD/33.6	\$1090
C500/180 16/1/CD/33.6	\$1090
C500e/180 16/1/CD/10B-T	\$1090
C500LT/180 16/1/CD	\$940

Monitors

Mitsubishi 91 TXM 21" Display	\$1599
Mitsubishi 87 TXM 17" Display	\$799
Apple 15" Display	\$499

PowerTower Pro Starter

PowerTower Pro G3/275 32/2/CD	\$4650
PowerTower Pro 250 32/2/CD	\$3990
PowerTower Pro 225 32/2/CD	\$3490
PowerTower Pro 200 32/2/CD	\$3190

PowerTower Pro Core

PowerTower Pro 250 16/2/CD	\$2990
PowerTower Pro 200 16/2/CD	\$2690

PowerCenter Pro Starter

PowerCenter Pro 210 MT 16/2/CD	\$2490
PowerCenter Pro 210 LP 16/2/CD	\$2390
PowerCenter Pro 180 MT 16/2/CD	\$2090
PowerCenter Pro 180 LP 16/2/CD	\$1990

Services

- System integration
- System Design
- Free Tech Support
- Onsite Service
- Educational/Govt Discounts
- SuperMac Service Center
- Power Computing Service Center
- DayStar Service Center

- All Major Credit Cards accepted
- Education PO's accepted
- Govt/Fortune 500 PO's accepted
- Same Day Shipping
- Authorized Service Center

Starmax

6000 32/4.3/CD/Zip	\$Call
5300 32/4.3/CD	\$2470
4200 32/2.5/CD	\$2510
3240 32/2.5/CD/Zip	\$2320
3240s 32/2.5/CD	\$2160
3200 16/1.2/CD	\$1350

Genesis

MP 900 0/0/CD	\$7500
MP 800 0/0/CD	\$5999
MP 450 0/0/CD	\$4890



Vector Computing Systems (212)343-8015 (212)343-9270 eMail: vectorcsys@aol.com

1-888-MAC-CLONES

CIRCLE 470 ON READER SERVICE CARD

"I always look at the entire Macworld Shopper section to see what is available. I also like to check the prices of all the different products."

-Owner

Computer Consultants

Macworld[®]
SHOPPER

MACS & POWERBOOKS
WANTED

TOP \$\$\$ PAID



11933 Wilshire Bl.
W. Los Angeles, CA 90025
www.macsolutions.com

Any Quantity
Fast Turnaround
Trade Ups Welcome

FedEx check delivery

We Buy, Sell & Trade

New & Used Macs

(800)80-WE-BUY

Tel: (310) 966-4444 Fax: (310) 966-4433

CIRCLE 473 ON READER SERVICE CARD

HAWKE
BUSINESS SYSTEMS
A Division of the CPS Services Group
Flemington, NJ 08822

(800) 875-2610

Fax - (908) 782-7027

Email - MacHawke@AOL.COM

Specialist in Refurbished Macintosh Equipment

Word Processing Packages

- Classic 4/40 w/Kyb & Mouse with HP Deskwriter Printer & Software - \$Call
- Classic II 4/80 w/Kyb & Mouse with Stylewriter II & Software - \$Call
- Se/30 8/80 w/Kyb & Mouse with HP Deskwriter Printer & Software - \$Call

6 Month Parts and Labor Warranty

Our Lowest Prices on Custom Configured Color Packages

Mac IISi	Mac IICi	Lc III	Quadra 610	Quadra 650	Quadra 840 AV
PM 6100/66	PM 6205/75	PM 7100/80	PM 7200/120		

All Color Packages come with Apple Color Monitor, Extended Keyboard and Mouse

Refurbished HP DeskWriter (Plus & Se Compatible) \$79.00

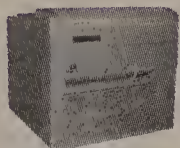
Refurbished Apple StyleWriter II Ink Jet Printers \$Call

ImageWriter II - \$129.00 LaserWriter IINT - \$349.00 Personal LaserWriter NTR - \$399.00

CIRCLE 457 ON READER SERVICE CARD

TEXAS INSTRUMENTS MicroLaser™ Pro E

- clear, crisp 600-dpi
- fast 12ppm!
- RISC processor
- 500-sheet capacity
- 3MB RAM with Adobe Memory Booster
- built-in support for Mac, Windows, & DOS!



BRAND NEW **\$749**

Color LaserWriter 12/600PS

- supports Mac, DOS, UNIX, even Windows
- true 600x600-dpi
- Color PhotoGrade
- prints up to 12-ppm
- Enhanced Grayscale
- accessory/setup kit included!
- LocalTalk, Ethernet, and Parallel ports

REFURBISHED **\$2899**

*Color LaserWriter 12/660 only \$3299



Performa 6200/75

- 75-MHz PowerPC™ 603
- internal 14.4 faxmodem
- 15" Multiscan
- keyboard & mouse

8/1GB/4XCD
complete!

PowerPC™
\$899



Performa 6400/180

- 16/1.6GB/8XCD
- 180-MHz PowerPC™ 603e
- keyboard not included

factory refurbished
\$899!

Performa 6400/200 model with 16/2GB/8XCD also available for only \$999

NEW!

APPLE INTERNAL CD-ROM DRIVES

BRAND NEW 8X AppleCD **\$119**
BRAND NEW AppleCD 600i **\$69**

*mounting kit not included

Drives Include
90-Day Warranty

E-Machines

- 8-bit accelerated video
- hardware pan & zoom
- for nubus-based Macs
- virtual screens feature

BRAND NEW **\$129**

DuoDock BLOWOUT!

Get an Original Apple DuoDock for your Duo 210 or 230. Upgradable on-board video for large displays.
*DuoDock Plus pictured

RECONDITIONED **\$299**

ProAudio Spectrum 16

- 16-bit audio processing
- for Mac LC-series
- mounts in PDS slot
- patch bay included

BRAND NEW **\$59**

Jabra Earphone

With EarPhone Streamline AV, Jabra Dialer Software, and Apple's Geoport Telecom Adapter you'll have a full telephone solution on your desktop. Streamline AV combines a speaker and a microphone in one small earpiece.

NEW **\$69**

ClarisWorks 3.0 diskettes or CD

The #1 best-selling Macintosh integrated product! Specify diskettes or CD please

NEW **\$29**

Avid VideoShop 3.0 CD-ROM

Do transitions and FX just like a pro! Your home movies will never look the same.

NEW **\$49**

Epson ES 300/GS Personal Document Station

- sheetfed image and text scanner
- 4 ppm scanning speed
- 10-sheet feeder built in
- 8-bit grayscale, 300-dpi
- OCR software included

NEW **\$79**

PowerPort Mercury

GlobalFax software included. Features data transfer speeds of 19.2Kbps and fax speeds of 14.4Kbps. Fastest standard modem available for the PowerBook 520 series

BRAND NEW! **\$149**

POWERMAC 7500/100 16/500/4XCD

ONLY **\$1399 NEW**

MAC QUADRA 950 0/0 CONFIGURATION
ONLY **\$799 NEW**

APPLE DUODOCK (FOR 210 AND 230)
\$299 REFURB.

PERFORMA 6300/100 16/1.2GB/4XCD
FACTORY REFURB. ONLY \$899

WORKGROUP SERVER 95 16/700/CD
\$999 REFURBISHED

WGS 9150/80 16/1GB/CD
\$1499 REFURBISHED

WGS 6150/66 8/700/2XCD
\$999 REFURBISHED

WGS 8150/110 16/1GB/CD
\$1699 REFURBISHED

PERFORMA 5200/75 8/500/4XCD

KEYBOARD INCLUDED! ONLY \$1099 NEW

LASERWRITER 4/600PS
FACTORY REFURBISHED ONLY \$599

TONER SOLD SEPARATELY

Personal LaserWriter LS

Designed for personal use, the Personal LS provides an economical way for you to enter the world of high-quality laser printing! Features 300-dpi, 4ppm

REFURBISHED **\$279**
TONER CARTRIDGE SOLD SEPARATELY

QuickTake 150

Capture 32 standard-quality images or 16 high-quality images. Includes closeup lens.

RECONDITIONED **\$399**

PrecisionColor 8/1600 PCI

- supports extended resolutions
- 2MB VRAM upgradable to 4MB
- FAST acceleration!

BRAND NEW **\$349**

XCEED Video Card

24-bit, large display support for LC and Performa series! Fits in PDS slot.

BRAND NEW **\$249**

POWERBOOK 5300C

100-MHz PowerPC 601 • 8MB of RAM/500MB HD
supports external video • **ACTIVE-MATRIX COLOR**



PowerPC™

\$1599



MACINTOSH LOGIC BOARD UPGRADES

- New Personal NT to NTR upgrade (exchange) ... \$79
- PowerMac 8100 to 8500/120 (exchange) \$999
- Quadra 950 to WGS 9150 (exchange) \$999
- PowerMac 7200 to 7600/120 (exchange) \$699
- Performa 630 to 6200/75 (exchange) \$399
- Performa 630 to 6300/100 (exchange) \$499
- Performa 6200 to 6300/100 (exchange) \$249
- Quadra 800 to PowerMac 8100/80 (exchange) ... \$599
- Quadra 660 to PowerMac 6100/60 (exchange) ... \$449
- Performa 600/11vx to Centris 650 (exchange) \$279

POWERMAC 7200/75 LOGIC BOARD WITH POWER SUPPLY

\$299

BRAND NEW!

1GB IDE Hard Drives

We've got a special on "pulls" from Apple CPU's!
ONLY \$149
90-day warranty

800, 840, 8100 POWER SUPPLIES

Original factory part from Apple. Brand new.

NEW **\$199**

APPLE ADB MOUSE II

The original Apple ADB Mouse II. In stock!

BRAND NEW **\$49**

APPLE 11X17 COLOR INKJET

Great for large-format color printing. The M9500 Apple Color Inkjet printer features 360-dpi print resolution, four large CMYK ink tanks, SCSI and parallel ports for MacOS or Windows support.

BRAND NEW **\$399**

Global Village Internal 14.4 for Performa

- 14.4 data and fax
- for Performa 6200, 6300, 5200 and 5200
- fits seamlessly in comm slot

DEMO (OEM) SPECIAL **\$29**

ORIGINAL APPLE 1.44 FLOPPY

Original Macintosh floppy drive. Please specify part # 661-0474 or #661-0121.

BRAND NEW **\$129**

Monitors

- Apple 14" A/V NEW \$349.
- *Apple MultiScan 17" \$599.
- **Apple 15" MultiScan \$329.
- **Radius IntelliColor Display/20e NICE! ... \$1299.
- **Hewlett-Packard 17" \$449.
- **Hewlett-Packard 20" \$649.

Printers

- **Apple StyleWriter 1200 \$139.
- Texas Instruments MicroLaser Pro E NEW \$749.
- *Apple Personal LaserWriter LS \$279.
- *Apple LaserWriter 16/600 \$1399.
- **Apple Personal LaserWriter 300 \$329.
- *Apple Personal LaserWriter NTR \$549.
- *Apple Portable StyleWriter \$149.
- Apple 11x17 Color Inkjet NEW \$399.
- *LaserWriter IIf w/5MB RAM \$749.
- *LaserWriter IIf w/5MB RAM \$899.
- *Hewlett-Packard DeskWriter 550c \$229.

Laser toner cartridges sold separately

* indicates refurbished
**indicates factory refurbished

Products are refurbished unless indicated as "new". Prices reflect a 2% cash discount and are subject to change without notice. Returns are subject to a 15% restocking fee. Not responsible for typographical errors. Refurbished systems may include like-new components and may also include cosmetic blemishes which do not functionally impair performance of the hardware.

SHREVE systems
<http://www.shrevesystems.com>

WE STOCK MAC PARTS!
1-800-227-3971

• For your protection all credit cards accounts are strictly verified •
FAX (318) 424.9771 • TECHNICAL SUPPORT (318) 424.7987
CUSTOMER SERVICE (318) 424.9791 • PURCHASING INFORMATION (318) 424.9791
1200 MARSHALL STREET • SHREVEPORT, LOUISIANA 71101

MWAd# 1197 **Business Leasing By** 



All Prices Are Based on C.O.D. Order & Subject to Prior Sales & Change!

* Factory refurbished with Warranty

• Limited Quantity While Supply Last!

COMPU.D

International, Inc.

6741 Van Noy Blvd., Van Noy, CA 91405

Sales (818) 787-3282

Fax (818) 787-5555

e-mail: csales@compu-d.com

1-800-929-9333

www.compu-d.com



FedEx **DHL**

Fast Worldwide Shipping

PowerMacs

4400/200	32-2GB, 12xCD, DOS	\$2245
4400/200	32-2GB, 12xCD, 33.6, Office	\$1545
4400/200	16-2GB, 8xCD	\$1195
6500/300	64-4GB, 12xCD, Zip, 33.6 Kb.	\$2345
6500/275	32-4GB, TV, Avid, 33.6 Kb.	\$2345
6500/250	48-4GB, 12xCD, Zip, Office	\$1995
6500/250	32-4GB, 12xCD, Zip	\$1695
6500/225	32-2GB, 12xCD, 33.6	\$1495

7300/200	32-2GB, 12xCD	\$2095
7300/180	32-2GB, 12xCD, DOS	\$2645
7300/180	16-2GB, 12xCD	\$1745

New

8600/300	\$3395
32-4GB, Zip 24xCD	
9600/300	\$4395
64-4GB, Zip, 24xCD	

New

9600/350	\$5295
64-4GB, Zip, 24xCD	

COMPU-D
Deal of the
month



DIMM Memory
We will beat any price
including installation

8600/200	64-4GB, 12xCD, Zip	\$3295
9600/200MP	64-9GB, CD	\$4695
9600/200	32-4GB, 12xCD	\$2695
9500/200	32-2GB, CD	\$2295
9600/200	32-0HD, 12xCD	\$1995
9500/180MP	32-2GB, CD	\$2695

Performa

6400/200	16/2.4GB, 8xCD, 28.8	\$1095
6300/100	8/1GB, CD	\$595*
6360/160	16/1.2GB, CD, KB, 28.8	\$849
6200/75	8/800, CD KB	\$595
5400/180	32/4.3GB, 8xCD KB	\$1745
5260/100	8/800, CD KB	\$1195

CD for PowerBooks

6x/8x/12x	\$175/195/225
-----------	---------------

6400/200

\$1495

16/2.4GB, 8xCD,
KB, 28.8+15" AV Display

5400/180

\$1195

16/1.6GB, CD,
KB, 15" Display

Star Color

Printer

Free

w/Sys. Purchase over \$1500

Apple



Video/Graphic Cards

radius



SuperMac Spectrum 24 PDQ+	\$179
SuperMac Spectrum 8SI	\$99
SuperMac Monochrome	\$59
Thunder 8/1600	\$189

VideoVision NuBus \$595

Turbo TV \$89

Twin Turbo 128M4P/128M8 \$229/449

Bravado 1000 PCI \$599

Targa 1000 PCI \$1449

Targa 2000 PCI \$2695



PowerBooks

3400c/240	16-3GB, 12xCD	\$3995
3400c/200	16-2GB, 12xCD	\$3095
3400c/180	16-1.3GB	\$2895
2400C/180	16-1.3GB	\$3095
1400c/133	32-2.1GB, 6xCD	\$2495
1400c/133	16-1GB, 8xCD	\$2195
1400cs/117	12-750, 8xCD	\$1899
1400cs/117	32-750, 8xCD	\$2045
DUO 2300C	40-2.1GB	\$1395
DUO 2300C	20-1.1, Floppy, Adptr.	\$1545*

PB.3400c/240 MHz

48/3GB, CD,
10BT, 56K \$4595

PB. 3400c/200 MHz

48/2GB, CD,
10BT, 56K \$3695

PB. 1400c/166 MHz

48/2GB, CD,
10BT, 56K \$2945

Apple



Apple
3400C
Lithium
Battery
\$179

STORAGE

Zip Drive SCSI/10 Crtrdg.	\$135/105
Jaz Drive SCSI/5 Crtrdg.	\$369/389
Zip+/JazII SCSI & Parallel	CALL

SyQuest SyJet 1.5GB SCSI Removable ---- \$439

Quantum Atlas 2.1GB SCSI-II ----- \$439

Quantum Atlas 4.5/9GB SCSI ----- \$599/1095

Seagate Barracuda 4.3GB SCSI-II ----- \$545

IBM 4.3GB SCSI-II (5 Year Warranty) ----- \$369

PowerBook 2.1GB IDE 2.5" ----- \$229

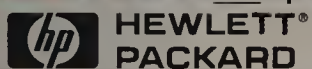
PowerBook 3.2 GB IDE 2.5" ----- \$489

Printers & Scanners

LaserWriter 12/640PS

Apple 12ppm, 600dpi, 8MB RAM **\$1285**

StyleWriter 6500/4500 \$445/349



LaserJet 5M*/5M \$1295/1395

LaserJet 5SIMX/Color 5M* \$3295/4395

LaserJet 4MV/6MP/5MP \$2195/795/589

DeskJet 1600CM/ DW 600C \$1495/175

DeskJet 870CXi/855C/CXi \$385/275/299

AGFA Arcus II \$1435

DuoScan \$4295

UMAX Scanners

UC1200SE	\$449
Astra 600S	\$219
Vista S12	\$439
Astra 1200S	\$449
PowerLook II	\$1259
PowerLook 2000	\$2795



Mac Clones

UMAX 5900/200 MHz MacOS \$2095

MOTOROLA 3000/200* Desktop \$795

3000/160* Desktop \$695

PowerComputing Tower/200 Minitower \$2155

Center/150 Minitower \$1775

Apple Design/Extended Kb. \$49/125

SOFTWARE

Adobe Photoshop 4.0/Illustrator 7.0	\$345/239
PageMaker 6.5/Acrobat 3.0	\$289/139
StreamLine 4.0/Persuasion 4.0	\$99/179
After Effects 3.0/Premiere 4.2	\$359/359

Adobe

Quark QuarkXpress 3.3/3.32/4.0 \$499/629/CALL

Macromedia Freehand 7.0 \$239

Bryce2.0 \$149

Kai's PowerTools 3.0 \$99

Painter 5.0/Detailer \$269/239

MS Office 4.2.1 \$279

MS Excel/MS Word 6.01 \$159/149

Microsoft

Graphic Tablets

WACOM

ArtPad II 4x5	\$119
ArtZ II 6x8/12x12*	\$259/299
ArtZ II 12x18*/12x18	\$399/649



PC's Desktops & Laptops
in Stock!
Call for Best Prices!

IBM ThinkPad

365X P133, 8/1.08GB, DSTN 11.3" \$1245

760E P150, 16/2.1GB, 6xCD, TFT 12.1" \$2795*

760XD P166MMX, 32/3.3GB, TFT 12.1" \$4295

TOSHIBA

T-660CDT P150, 16/1.3GB, TFT 11.3" \$2995

T-510CDT P133, 16/1.3GB, TFT 12.1" \$2195

T-740CDT P166MMX, 16/3GB, TFT 13.3" \$3795

COMPAQ Armada

1550DMT P133 16/1.4, CD, TFT 12.1" \$2395

7710MT P150MMX 16/1.6, TFT 12.1" \$3195

7750MT P166MMX 32/2.1, TFT 12.1", 33.6 \$3995

Systems & Peripherals

Macworld[®] SHOPPER

COMPUTER REVELATIONS

POWERMAC	
7300/180	\$1899
7300/200	\$2299
8600/200/300	CALL
9600/200/300/350	CALL
7200/7600/8500/9500/	CALL
PRINTERS	
LWRITER 12/640	CALL
LWRITER 4/600	\$889
HP 6MP	CALL
HP 1600 C/PS	CALL
HP 4MV	\$2699
STYLEWRITER 1500/2500	CALL
POWERBOOK	
1400CS/12/750	\$1999
1400CS/16/750CD	\$2299
1400C/117	CALL
1400C/133	CALL
UMAX / SUPERMAC	
S90L	CALL
S900D	CALL
SCANNERS	
VISTA/S6E SOHO	\$279
POWERLOOK II	\$1829
EXPRESSION 636	\$1389
AFGA SNAPSCAN	\$329
AFGA ARCUS II	\$1589
MONITORS	
APPLE 1705	\$695
CPD200SX	\$689
PRECISION. 21"SR	\$3299
CPD 100SX	\$379
NEC 17XV	\$779
PERFORMAS	
6360 / 6400	CALL

ALL APPLE PARTS & ACCESSORIES IN STOCK
Leasing / Rentals / Supplies
Service avail. in NYC area
1 800 275-9924
in NY 516 737-0800
FAX 516 737-0923
331E DANTE COURT
HOLBROOK NY 11741
NEW & USED BOUGHT & SOLD

CIRCLE 474 ON READER SERVICE CARD

USED MACINTOSH!



- ★ We match buyers and sellers of used MAC equipment!
- ★ All MAC models available; SE to POWER PC.
- ★ All hardware is tested and includes a limited warranty.
- ★ Qualifying School, Gov't and Fortune 1000 POs Welcome
- ★ We also specialize in used trade-ins

The Computer Exchange

800-304-4639

www.compexch.com
Ph: 404-315-0897
Fax: 404-315-7840

2100 Cheshire Bridge Rd Ste E Atlanta, GA 30324

CIRCLE 460 ON READER SERVICE CARD

Want bargains online?

Bookmark the
Mac Shopper at:



www.macworld.com/buyers/shframed.htm

Advertise at (800) 888-8622

MacBYTE

NO PAYMENT FOR
6 MONTHS!

BUY • SELL • TRADE

- CASH FOR MACS
- NEW & USED MACS WITH WARRANTIES
- FEDEX OVERNIGHT SHIPPING



Visa/Mastercard/Amex/Discover
Diners Club/COD
Local Area On-Site Consulting

800-432-2983

4223 Glencoe Ave., Suite C200
Marina del Rey, CA 90292

FAX: 310 - 448 - 4494

E-MAIL: MacByte@aol.com

CIRCLE 428 ON READER SERVICE CARD



"Friends
don't let friends
use 'DOS'!"

... Buy or Sell Any
Macintosh Through Us!

United Computer Exchange
800.755.3033 770.612.1205
Visit Our Online Exchange at www.uce.com



CIRCLE 436 ON READER SERVICE CARD

1-800-334-KIWI

Kiwi Computers • Save on refurbished Macs

Performas

630 12/1.2 Gig 4xCD	\$399
6200/75 8/1 Gig 4xCD	\$549
6300/100 16/1.2 Gig 4xCD 28.8	\$699
6360/160 16/1.2 Gig 8xCD 28.8	\$775
6400/180 16/1.6 Gig 8xCD 28.8	\$875
6400/200 16/2.4 Gig 8xCD 28.8	Call

Power Macs

7600/132 16/1.2 Gig 8xCD	\$1399
8500/150 16/1.2 Gig 8xCD	\$1649

Powerbooks

5300cs 8/750	\$1099
5300c 16/1.1 Gig	\$1349

Motorola Starmax

4000/160 604e Desktop 16/1.2 Gig 8xCD	\$1099
4000/200 604e Desktop 16/1.2 Gig 8xCD	\$1349
4300/200 604e Minitower 32/2.5 Gig 8xCD	\$1599

Visa/Mastercard/American Express No Surcharge.

Refurbished products have a 90 day warranty • Returns subject to a 15% restocking fee • Prices subject to change without notice.

Toll Free: 800-334-5494 International: 310-553-4507 Fax: 310-286-9667

Hours: Mon-Fri 8am to 6pm, Sat 9am to 2pm • Better Business Bureau Member

Kiwi Computers, P.O. Box 67381, Los Angeles, CA 90067

CIRCLE 404 ON READER SERVICE CARD

Upgrades

Performa 630 series to 6300/100mhz	\$399
Performa 6200 to 6360/160mhz	\$425
Performa 6300 to 6360/160mhz	\$375
Performa 6200 to 6400/180mhz	\$549
Performa 6200 to 6400/200mhz	\$675
Performa 6300 to 6400/200mhz	\$625
PowerMac 7200/120 to 7600/132	\$599

Monthly Specials

Apple ADB Mouse II	\$20
Apple Design Keyboard	\$35
Apple manual Inject 1.44 floppy	\$49
Apple 1.2 Gig IDE hard drive for Performa	\$125
Performa 630 logic board	\$125
Performa 630/6200 case with power supply	\$125
Apple TV/Video card for P630, 6200, 6300	\$85
8mb 72 pin SIMM	\$25
16mb 72 pin SIMM	\$49

FAST CASH

www.mactraders.com

For ALL Macs, Memory & Peripherals — Working or not

TOP DOLLAR PAID

Mac Traders (800) 990-0995

(310) 576-2466 Mon.-Fri. 9 AM-6 PM Sat. 10 AM-4 PM (P.S.T.) Fax: (310) 394-7323
1511 Lincoln Blvd. (bet. Broadway & Colorado), Santa Monica CA. 90401

PACIFIC COMPUTER EXCHANGE

Used Macs Priced to Move

Cash paid
for your
Mac via
Fed Ex!

6205/75 16/1 Gig CD	\$799
7200/75 16/500 CD	\$749
7100/66 8/250	\$699
6100/66 8/500 CD	\$599
Quadra 840AV	\$599
Centris 650/660AV	\$499
Quadra 700	\$399
Quadra 610/630	\$429/469
Ilci/Ilvx	\$299
Ilci/Ilcx	\$279/249
LC/LCII/LCIII	\$199/249/299
SE30/ColorClassic	\$399/499
SE/Classic/Classic II	\$149/199/299

800.790.3881

ORDERS &
PURCHASING INFO

We buy and
sell used Macs!

SPECIAL!

Media Vision
Refurbished
2X External
CD ROM
for
Powerbooks
\$ 79

NEW!!
14.4 Internal
Modem for
Powerbook
100 Series
\$ 79

Power Book 5300 16/500	\$1099
Powerbook 520 / 520c	\$899 / \$999
Powerbook 180 / 180c	\$799 / \$899
Powerbook 160 / 170	\$599
Powerbook 145 / 150	\$499
DouDock 1 w/ modem	\$199
LaserWriter IIInt/ntx	\$299/399
Personal LaserWriter LS	\$249
HP DeskWriter	\$169
Portable DeskWriter 310/320	\$149
ImageWriter II	\$159
NEC External 4x CD	\$99

CIRCLE 451 ON READER SERVICE CARD

Power Macintosh®

4400

200MHz 200 Office
16/2G/CD/KB 32/2G/CD/KB

\$1259 \$1549

Power Macintosh®

7300

180MHz 200MHz
16/2G/CD/KB 32/2G/CD/KB

\$1849 \$2279

Power Macintosh®

6500

225MHz \$1599
16/2G/CD/KB

Power Macintosh®

6500

250MHz 250 Office
32/4G/CD/Zip/KB 48/4G/CD/Zip/KB

\$1779 \$2069

Power Macintosh®

6500

275MHz 300MHz
32/4G/CD/Zip/KB 64/4G/CD/Zip/KB

\$2495 \$2495

Power Macintosh®

8500

180MHz \$1949
32/2G/CD Refurb.

Power Macintosh®

7300/PC

180MHz \$2899
32/1.1G/12xCD PC Card

Power Macintosh®

8600

200MHz \$2649
32/2G/12xCD Zip/KB

Power Macintosh®

8600

300MHz \$3249
32/4G/24xCD KB

Power Macintosh®

9600

200MHz 200MP
32/4G/CD/KB 32/4G/CD/KB

\$2739 \$3449

Power Macintosh®

9600

233MHz \$2889
32/4G/12xCD

Power Macintosh®

9600

300MHz \$3999
64/4G/24xCD KB

Power Macintosh®

9600

350MHz \$4769
64/4G/24xCD KB

PowerBook®

3400c

200MHz \$3789
16/2G/12xCD

PowerBook®

3400c

240MHz \$4799
16/3G/12xCD

Power Macintosh®

6400

200MHz 200Video
16/2.4G/CD Video Edition

\$1229 \$1599

Apple®

15" Monitor

Refurb. \$279*

SONY

100sx/100sf

15" Monitor .25 Dot Pch
\$327/339

SONY Sale!

SONY

200sx/200sf

17" Monitor .25 Dot Pch
\$585/639

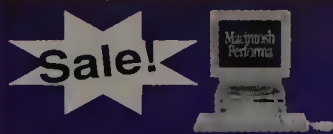
SONY Sale!

SONY

300sf/20SE2

20" Monitor
\$1329/1739

PERFORMA



6360/160 16/1.6/CD/KB 949
6400/180 16/1.6/8XCD 1069
6400/200 16/2.4/8XCD 1199
6400/200 Video Edit. 1599

POWERBOOK®

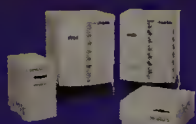
1400CS 12/7500/Passive 1539
1400CS 16/7500/CD/Pass 1759
1400C/133 16/1G/CD 2439
1400CS/133 2279
1400C/133 2729
1400C/166 2799
3400C/180 16/1.1G/6xCD 3389
3400C/200 16/2GB/6xCD 3789
3400C/240 16/1.1GB/12xCD 3589
5300C 8/500 1499
2300C 20/1.1/MDM *1349
2400C/180 16/1.3G 3189

Apple® Monitors

MS 15" *279
MS 15AV 389
MS 1705/1710 609/749
MS 1710AV 849
MS 750/750AV 787/879
MS 20" 1349
AppleVision 850 1669
AppleVision 850AV 1799

WorkGroup®

WorkGroup Specialist!



6150/66 16/1.2/INTRNT 1299
7250/120 16/2GB/INTRNT 1799
7350/180 48/4GB/12XCD 2399
7350/180 48/4GB/CD/INTRNT 2829
7350/180 48/4GB/CD/AShr 3999
9650/233 64/4GB/CD/INTRNT 4719
9650/233 64/2X4GB/CD 5679
9650/233 64/2X4GB/CD/AS 5679
9650/233 64/4GB/AS/DAT 5679
9650/350 64/4GB/CD/AS CALL
500/132 32/CD/BASE 6399
500/132 32/2GB/DAT/CD 7939
700/150 32/1GB/CD 7575
700/150 48/4GB/DAT/CD 9399
700/200 48/2-4GB/CD 10789

Apple® Printers



StylWrtr 2200 249
StylWrtr 1500/2500 169/209
StylWrtr 4100/4500 237/327
StylWrtr 6500 449
LsrWrtr 4/600 PS 759
LsrWrtr 12/640 PS 1379
LsrWrtr 16/600 W/Tnr 1739
LsrWrtr 12/660Ps Kit 5489

UMAX®

C500/180 16/1.2/CD/28.8 1039
C600/200 16/2GB/CD/28.8 1199
J700/180 24/2GB/CD/33.6 1689
S900/200 32/2GB/CD/KB 2329
S900/233 32/2GB/CD/KB 2679
S900/250 32/2GB/Zip 3349
S900/200DP 32/2GB/CD 2959
S900/250DP 64/4GB/Zip 6149

MOTOROLA

5000/225 32/2.5/CD/56k 1819
5000/250 32/2.5/Zip/56k 2075
5000/275 32/4.3/CD/Zip 2419
5000/300 32/4.3/4 IX/Zip 2489
5500/200 64/4.3/CD/Zip 2599
6000/233 32/2G/CD/10BT 3445
6000/266 64/2G/10BT/Zip 4039

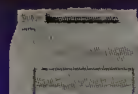
SONY

100SX/100SF 15" 327/339
200SX/200SF 17" 585/639
220vs/17SE2 829/839
300SF 20" 1329
20SE2 1600X1280 .25 1739
GDM-W900T 24" 4199

NEC

M500/M700 379/737
XV15+/XV17+ 369/644
P750/XE21 829/1469
E1100/P1150 1349/1489

HP HEWLETT PACKARD



DeskWriter 680C 289
DeskJet 340 Portable 318
DeskJet 870CXi 375
DeskJet 1600CM 1599
LaserJet 6MP 829
Color LaserJet 5M 4799
LaserJet 4MV 2099
LaserJet 5M 1439
LaserJet 5SI MX 3349
ScanJet 4C Mac 719
DesignJet 755CM Plotter Call

EPSON®

Expression 636 Exec 687
Expression 636 Artist 839
Expression 636 Proff. 1239
Stylus Color 600 279
Stylus Color 800/1520 419/735
Stylus Color ProXL 1369
Stylus Color 3000 1689

AGFA

Arcus II Le/Full 1249/1479
StudioStar LE/Full 749/899
StudioScanIISI Le/Full 459/589
SnapScan 259
EPhoto Digital Camera 279

UMAX®

Astra 600S 179
Astra 1200S Deluxe 399
Astra 1200S w/full Photo 499
PowerLook II Pro 1279
Mirage IISe/II 3159/6689

GLOBAL VILLAGE

Platinum 33.6 89
Platinum 56k 196
Platinum 56k X2 199
Platinum PC 199
Platinum PC 56k 248
Platinum Pro 56k 339

ViewSonic

15GS 15" 339
15GA 15" 369
17GS 17" 569
17GA 17" 607
17PS 17" 699
GT770 17" 629
P810 21" 1349
PT770 17" 688
PT813 20" 1459
P815 21" 1539
G810 21" 1399

WACOM

Art Pad II 129
Artz II 6x8 298
Artz II 12 x 12 399
Artz II 12 x 18 649

TARGA

Targa 2000 2685
Targa 2000 Pro 2899

MICROTEK

ScanMkr E3 185
ScanMkr E6 329
ScanMkr E6 Pro 499
ScanMkr 1299

I-MEGA

ZIP 100mb drive 139
JAZ 1gb drive 379
100mb/1gb 1479

IXMicro

Turbo TV .95
4MB PCI 326
6MB PCI 550

Nikon

ScanTouch 569
CoolScan II 859
Super CoolScan 1639

NEWTON

2000 5MB 929
2000 5MB,KB 999
2MB / 4MB 69/139
Keyboard 79

FWB®

SldgHmr 8200 2799
SldgHmr 17400 4589
Hmr DLT 15GB 2589
Sledgehammer PCI UW

1800-533-9005

E-MAIL US AT: COMPAMER@aol.com

(310) 446-1771 10435 Santa

FAX Bids Monica Blvd

(310) 475-7744 LA, CA 90025

We are open on Saturday!

**COMPU
AMERICA**
"The Computer Specialist"

Check out our WEB!!!

UPDATED DAILY!!!

Online Ordering

Stock/Availability

Color Photos

Complete Specs

Shipping Estimates

International Sales

Credit/COD/Leasing

No Wait! No hold!

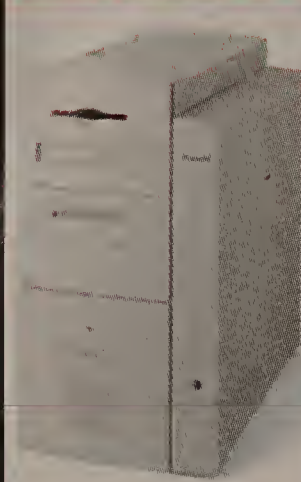
Completely Accurate!

[HTTP://WWW.COMPU-AMERICA.COM](http://www.compu-america.com)

Government, University, and Fortune 1000 P.O.'s are welcome! International Orders Please call (310) 446-1771

PowerMac 8600

SPECIAL!



604e WITH 256K LV2 CACHE
32MB RAM
3 PCI SLOTS
2MB VRAM
INTERNAL ZIP DRIVE
16-BIT STERIO SOUND
BUILT IN VIDEO IN/OUT

300MHZ 604E 200MHZ 604E
4GIGHD 2GIG HD
24XCD 12XCD

\$3199 \$2399

PowerBook 3400C

SPECIAL!

603e WITH
256K LV2 CACHE
16 MB RAM
2 PCMCIA SLOTS
12.1" DISPLAY
800X600 RESOLUTION
16-BIT STEREO SOUND



240MHZ 603E 200MHZ 603E 200MHZ 603E
3GIGHD 2GIG HD 2GIG HD
12XCD 12XCD 6XCD

\$4495 \$3599 \$3395

NEW POWERMACS!

9600/350	64/4G/24X	4899
9600/300	64/4G/24X	3799
9600/200MP3	32/4GIG/CD	2999
9600/233	32/4GIG/CD	2795
9600/200	32/4GIG/CD	2595
8600/300	32/4G/24X	3199
8600/200	32/2GIG/CD	2399
7300/PEN	32/2GIG/CD	2899
7300/200	32/4GIG/CD	2199
7300/180	16/2GIG/CD	1695
6500/300	32/4G/CD	2399
6500/275	64/4G/CD/ZIP	2399
6500/250	48/4G/CD/ZIP/D	1979
6500/250	32/4G/CD/ZIP	1779
6500/225	32/3G/CD	1679
4400/200	16/1G/CD/KEY	1199
4400/200	32/2G/CD/OF/K	1499

POWERMAC

7200/75	8/500/4XC	699*
7200/90	8/500/4XCD	749*
7200/120	16/1.2G/8XCD	999*
7200/120	16/1.2G/DDS	1599*
7600/120	16/1G/4XCD	1299*
7600/132	16/1G/CD	1399*
8500/120	16/2G/4XCD	1499*
8500/132	16/1.2G/4XCD	1599*
8500/150	16/2G/8XCD	1699*
8500/180	32/2G/8XCD	1799*
9500/132	16/2G/8XCD/V	CALL
9500/150	16/2G/4XCD/MID	CALL
9500/200	32/2G/8XCD	1999*
9500/180	MP 32/2G/8XCD	2399
8100/100	8/700	999*
8100/100	16/1GIG/CD	1399*
8100/110	16/2G/4XCD	1499*

Apple Printers

SW 1200/2400	99*/179*
SW 2200	279
SW 1500	179/149*
SW 2500	229/189*
SW 4100	239
SW 4500	339
Apple LW 4/600PS	699/599*
Apple LW 12/640/PS	1199/999*
Apple LW 16/600PS	1689/1199*
Apple LW 12/660PSC	5299/3399*

APPLE Monitors

Apple Ms 14"	279*
Apple MS 15"	299*
Apple MS 15AV	369
Apple 1705 17"	599
Apple 1750 17"	CALL
Apple 1750AV	CALL
Apple Multiscan 20"	1099*
Apple Multiscan 850 20"	1399
Apple Multiscan 850av	1699

POWERBOOKS

3400C/240	16/3G/12XCD	4495
3400C/200	16/2G/12XCD	3599
3400C/200	16/2G/6XCD	3395
3400C/180	16/1.2G/12XCD	CALL
3400C/180	16/1.2G/6XCD	3195
3400C/180	16/1.3G	2995
2400C/180	16/1.3G	CALL
1400C/166	16/2G/CD	2699
1400C/133	16/1G/CD	2399
1400C/117	16/1G/CD	2099
1400CS/133	16/1G/CD	1999
1400CS/117	16/750/CD	1799
1400CS/117	12/750	1599
5300CE/117	32/1G	1699*
5300C/100	8/500	1195*
5300C/100	16/750	1295*
5300CS/100	8/750	1099*
5300/100	8/500	899*
190CS/66	8/500	999*
190/66	8/500	899*
DUO 2300C	20/1.2GB/14.4	1299*
DUO 2300C	8/750/14.4	999*
DUO DDCK		499
540C	12/160/MDD	999*

PERFORMAS

6400/200V	16/2.4G/CD	1399*
6400/200	16/2.4GIG/CD	999*
6400/180	16/1GIG/CD	899*
6320/120	16/1GIG/CD	799*
6300/100	16/1.2G/4XCD	749*
6360/160	16/1.2G/8XCD	799*
6220/75	16/1G/CD/TV	649*
6200/75	8/1GIG/4XCD	599*
6116/66	8/700/4XCD	599*
5320/120	16/1.2G/CD/15"	1199
5260/100	16/800/CD	999*
5200/75	8/800/CD	1099*
5400/180	16/1.6G/CD	1299
631/66	8/500/CD	549*

WorkGroup Servers

7250/12D	16/2G/CD	1095
7250/120	16/2G/SHARE	1999
7350/180	48/4G/CD/SHA	2999
7350/180	48/4G/CD/INT	2799
7350/180	48/4G/CD	2499
8550/132	24/2GIG/CD	2099
8550/132	24/2G/SHARE	2999
8550/200	32/2G/CD/INT	3995
8550/200	32/2G/CD/SHR	3295
8550/200	32/2G/CD/DAT	3995
500/132	32/1G/CD	6299
700/150	32/1G/CD	7399
700/200	48/2G/CD	9995
9150/120	16/2GIG	1495
9650/233	64/4G/CD/SHA	5499
9650/233	64/4G/CD/INTER	4799
9650/233	64/4G/CD/DAT	5099

UMAX

S900/250DP64/4G/8XCD	4995	
S900/200DP32/2G/8XCD	2995	
S900/180DP32/2G/8XCD	2395	
S900/250	32/2G/8XCD	3699
S900/233	32/2G/8XCD	2799
S900/225	32/2G/8XCD	2099
S900/200	32/2G/8XCD	2199
S900/180	32/2G/8XCD	1995
J700/150	16/2G/8XCD	1399
J700/180	16/2G/8XCD	1599
C600/240	24/2G/8XCD	1299
C600/200	16/2G/8XCD	1149
C600/180	16/1G/8XCD	1049
C500/180	16/1G/8XCD	1069
C500/160	16/1G/8XCD	999
VISTA Astra 600-LE		199
VISTA Astra 600-PRO		CALL
VISTA Astra 1200-LE		449
VISTA Astra 1200-PRO		549
VISTA Astra POWERLOOKII		1299

SONY

Sony 100SF/100SX	379/339
Sony 200SF/200SX	679/599
Sony 300SF	1299

WACOM

ARTZ II 6 X 8 W/PAINTER	579
ARTZ II 6 X 8	295
ARTZ II 12 X 12	399
ARTZ II 12 X 18	679

hp HEWLETT PACKARD

5SIMX	3499
5M	1499
5MP	649
6MP	849
4MV	2299
Deskjet 680C	279
Deskjet 870CXI	389

radius

PRECISIDN VIEW 21"	1499
PRESSVIEW 21SR	2699
Thunder 30/1600	659
Thunder color 30/1600	1749
Thunder Power 30/1600	829
Thunder Power 30/1920	1099
Thunder 3D 1600 x1200	2699
VIDEO VISION STUDIO 2.0	3399

MOTOROLA

3000/200-6 16/1.2/8XCD	1299
3000/200-6S 32/2.5/8XCD	1499
3000/240-6S 32/2.5/8XCD	1999
3000/200-6E 32/2.5/16X	1699
3000/240-6E32/2.5/16X	1999
4000/160-6S 32/2.5/8XCD	2199
4000/200-6 32/2.5/8XCD	1995
4000/200-6E32/4.3G/16X	2299
5000/300-32/4.3/16XCD	2199
5000/300-G 32/4.3G/16X	2699



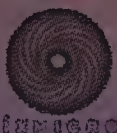
XCLAIM ULTRA VR 4 MEG	299
XCLAIM ULTRA VR 2 MEG	199
XCLAIM TV TUNER	89
XCLAIM 3D 8 MEG ACCEL	339



VIEWSONIC 15GA-2	389
VIEWSDNIC 15GS	369
VIEWSONIC 17GA	639
VIEWSDNIC 17GS	599
VIEWSDNIC 17PS	689
VIEWSDNIC GT770	669
VIEWSDNIC PT770	709
VIEWSDNIC PT775	789
VIEWSDNIC PT813	1499
VIEWSDNIC P810	1299
VIEWSDNIC P815	1499
VIEWSDNIC G810	1199

EPSON

STYLUS COLDR 600	299
STYLUS COLDR 800	429
STYLUS COLDR 3000	1649
EXPRESSIDN/636/EXEC	749
EXPRESSIDN/636/ART	949
EXPRESSIDN/636/PRO	1229



TWIN TURBD 8 MEG PCI	449
TWIN TURBD 4 MEG PCI	289
TWIN TURBD 2 MEG PCI	179

NEC

NEC 15XV+	449
NEC 17XV+	649/599*
NEC C500 15"	429
NEC C400 14"	329
NEC E500 15"	389
NEC E700 17"	679
NEC M750 17"	899
NEC E110D	1349
NEC P1150	1499



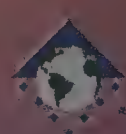
ZIP DRIVE 100 MEG	139
JAZZ DRIVE 1 GIG	369
ZIP CART 10 PACK	129
JAZZ CART	89

GCC TECHNOLOGIES

GCC ELITE 600ET (10PPM)	899
GCC ELITE XL-608	2199
GCC ELITE XL-616	2399
GCC ELITE XL-808	2699
GCC ELITE XL-1208	3999

RASTEROPS

SUPERSCAN MC-6215	569
SUPERSCAN MC-6315	679
SUPERSCAN MC-7515	999
SUPERSCAN MC-20"	1169
SUPERSCAN MC-801	1499
SUPERSCAN MC-801-HR	1699



GLOBAL VILLAGE COMMUNICATION

Global Village Plat 33.6 Voice	89*
Global Village Gold II PCM 14.4	49
Global Village Gold II 14.4EXT	49
Global Village 28.8 PCMCIA	169
Global Village 56.6 PCMCIA	249
Global Village 56.6 ETH/PCM	369

All prices are cash discounted. Prices subject to change without notice. Not responsible for types. An asterisk "*" denotes refurbished product.

Circle 467 on reader service card



Macintosh Systems & Peripherals

Guaranteed Low Prices • Huge Inventory

Celebrating Over 10 Years in Business at the Same Location

PRINTERS POWERBOOKS POWERMACS



Apple SW 1500 /2200	179 /269
Apple SW 4100 / 4500	239 /335
Apple SW 6500	459
Apple LW 4-600	795
Apple LW 12-640	1495
Apple LW 8500 (20 ppm)	1999
Apple Color LW 12-660	5775
Epson Color Stylus 600	285
Epson Color Stylus 800	399
Epson Color Stylus 1520	739
Epson Color Stylus 3000	1769
Epson Color Stylus Pro XL	1389
Hewlett Packard 870CXI	389
Hewlett Packard 6MP	885
Hewlett Packard 5M	1555
Hewlett Packard 4MV	2395
Tektronix Phaser 140/ 350	925/ 2765

Storage Products

Iomega Zip Drive	139
Iomega Jazz Drive	375
Syquest Syjet 1.5 GB	379
La Cie 2.1 External	349
La Cie 4.3 AV External	499
Seagate Hawk 2 GB	249
Quantum 4.5 Atlas	625
Seagate 9 GB Barricuda	1199
La Cie 9GB AV External	1199
LaCie 18GB Raid Array	2950
Atto Express PCI Wide	359
JackHammer PCI Wide	379

CD & Optical Drives

Fujitsu Dynamo 640	459
FWB Hammer Dat 8000	1199
Olympus 2.6 Power MO	1699
Pinnacle Vertex 2.6	995
Pinnacle Apex 4.6	1425
VST 230 MB PB1400	425
Yamaha CD 4X6 w/Toast	699

Video / Graphics

TwinTurbo - 4 / 8 Meg	299 / 499
#9 Imagine 128 8 Meg	749
Xclaim VR - 2 / 4 Meg	199 / 299
ThunderPower 30/1600	829
Miomotion DC20	599
MioMotion DC30	675
Targa 1000 / 2000	1575 / 2985
Targa 2000 PRO	3375
VideoVision Studio 2.0	1999

SOFTWARE SPECIALS

Adobe Pagemaker 6.5	289
Adobe Illustrator 7.0	299
Adobe PhotoShop 4.0	325
Microsoft Office 4.21	259
MacroMedia Freehand 7.0	299

1400 Memory	8/16/32/48	\$65/110/185/299
3400 Memory	16/32/64/128	\$110/189/385/999

We Carry a full line of PowerBook Accessories



1400cs/133	16-1.3 GB 8xCD	2199
1400c/ 133	16-1.3 GB 8xCD	2575
1400c/ 166	16- 2 GB 8xCD	3075
2400c/ 180	16-1.3 GB	3099
3400c/ 180	16-1.3 GB 12xCD	3499
3400c/ 200	16- 2 GB 12xCD	3925
3400c/ 240	16- 3 GB 12xCD	4799

MONITORS



Apple • Hitachi • NEC
Radius • RasterOps • Sony
Viewsonic • CTX • Samsung
Phillips • MAG • Nanao

Apple 15" AV Display	389
Apple MultiScan 1705	599
Apple 17" 750 / 750AV	755 / 845
Apple 20" 850 / 850AV	1599 / 1775
Nec 15" M500	379
Nec 17" M700	745
Nec 21" P1150	1499
Radius 17" PressView 17SR	1695
Radius 21" PressView 21SR	2899
RasterOps 21" MC801HR	1739
Sony 15" 100SX / 100SF	349 / 435
Sony 17" 200SX / 200SF	629 / 729
Sony 20" 300SFT	1565
ViewSonic 17" EA / GA	599 / 675
ViewSonic 17" PT 770 / 775	689 / 789
ViewSonic 21" GT810 / PT815	1455 / 1649

Scanners & Cameras

Apple Color Quick Cam 200	585
Agfa SnapScan 3D	299
Agfa Arcus II w/transp.	1585
Epson Express 636 Exec	849
Epson Expression 636 Pro	1239
Hewlett Packard ScanJet 4C	699
Kodak DC 25 / 50 / 120	389/649/939
Linotype LinoColor Jade	499
Microtek ScanMaker E3 / E6	185/329
Microtek ScanMaker III	1195
Nikon CoolScan II	859
Olympus D200L	549
SprintScan 35LE/35ES/35+	759/1429/1765
Umax Astra 600S / 1200S	229/429
Umax 1200S Pro with PS 4.0	649
Umax Powerlook II Pro	1249
Umax Powerlook 2000	3799

Custom Configurations Available

4400/200, 16-2 GB - 8xCD	1249
4400/200, 32-2 GB -12x - Mdm	1575
6500/225, 32-3 GB -12x - Mdm	1625
6500/250, 32-4 GB -12x - Mdm-Zip	1749
6500/275, Creative Studio Bundle	2550
6500/300, 64-4GB -12xCD - Zip	2485
7300/180, 16-2GB -12xCD	1825
7300/180 PC, 16-2GB -12xCD	2879
7300/200, 32-2GB -12xCD	2195
8600/200, 32-2GB -12xCD - Zip	2499
8600/250, 32-4GB -24xCD - Zip	2850
8600/300, 32-4GB -24xCD - Zip	3199
9600/200 MP, 32-4GB -12xCD	3450
9600/300, 64-4GB -24xCD - Zip	3999
9600/350, 64-4GB -24xCD - Zip	4725

MOTOROLA 5 Year Warranty

3000/200DT- 16-1.2 GB-8xCD	1335
3000/200MT-E 32-2.5 16x-Enet-Zip	2155
3000/240MT-E 32-2.5 16x-Enet-Zip	2325
4000/160MT- S 32-2.5 8xCD	1775
4000/200MT-S 32-2.5 8xCD	2175
5000/225MT-S 32-2.5 16xCD	1887
5000/300MT 32-4.3 16x-Enet-Zip	2655
6000/233MT 32-2G 24x-Enet-Zip	3649
6000/266MT 64-2G 24x-Enet-Zip	4275

UMAX COMPUTERS

C500/180 16-1.2GB-8xCD	975
C600/180 16-1.2GB-CD-M-E	1075
C600/200 16-1.2GB-8xCD	1275
C600/240 24-2.1G-8xCD-M	1855
J700/180 24-2GB-8xCD-M-E	1725
S900/200 32-2.1GB-8xCD	2399
S900/233 32-2GB-8xCD	2749
S900/200 DP 32-2.1-GB 8xCD	3050
S900/250 64-4GB-CD-Zip-E	3450
S900/250 DP 64-4GB-CD-Zip-E	6299

MEMORY UPGRADES

8 Meg Dimms	49
16 Meg Dimms - Simms 60ns	79
32 Meg Dimms - Simms 60ns	129
64 Meg Dimms	249

Call For Unlisted Items
Over 2500 Macintosh
Products Available

Leasing

On Approved Credit to...

Business and Individuals

Internet Solution

only w/56k Modem
\$1765
\$59 per mo.

4400/200 16 Megs Ram, 1.2G HD, 8xCD
15" AV Display, Ext. Keyboard & Mouse
56k Fax Modem, Internet Connection Kit
Netscape 3.0, Claris E-Mail Software, AOL

Home-Work and Fun!!

\$2265
\$79 per mo.

6500/225 32 Megs Ram, 3G HD, 12xCD
15" AV Display, Ext. Keyboard & Mouse
SW 4100 Color Printer, 33.6 Fax Modem
Internet Connection Kit, Quicken, Claris Works
Touchbase / Date Book Pro, Encyclopedia
3-D Atlas, Dictionary, Mayo Family Health
Clip Art, 3-D Accelerated Games, and much more!

Graphics Station

Speed Demon
- w/Adobe Bundle
\$5699
\$193 per mo.

8600/300 64 Megs Ram, 1 MB L2 Cache
24xCD Player, IMS 4 MB Accelerated Video
Iomega Zip Drive, Apple 17" Display
Apple Extended Keyboard & Mouse
Adobe PhotoShop 4.0, Adobe PageMaker 6.5
Adobe Illustrator 7.0

Cyber Shop & Product Info at...
www.digicore.com



Order Toll Free

800-858-4622

Int'l & Dealers

818-785-2800

24 Hour Fax

818-785-3100

15500 ERWIN ST, VAN NUYS CA 91411

36 Month Lease w/Purchase Option

\$2500	\$4000	\$8000	\$15,000	\$25,000
\$87	\$138	\$269	\$498	\$827

Sale Price
Your Cost

GE ON-SITE WARRANTY 2nd - 4th Year

\$700 - \$1200	\$1201 - \$2000	\$3001 - \$4000	\$4001 - \$5000
\$129	\$159	\$219	\$249

• Lease rates listed are for businesses - call for Individual rates • Leasing is O.A.C. • Prices listed are C.O.D. • Pricing & Availability subject to change • Call for best Price • Returns Require DigiCore RMA •

CIRCLE 421 ON READER SERVICE CARD

CALL THE MAC EXPERTS!

Save hundreds of dollars on these specially priced fully configured systems, or simply call one of our experts for your own custom configuration, usually with same day delivery! Only PowerMax will give you a frank, thorough comparison of each of the major Macintosh system manufacturers based on your individual needs!



NEW!

Package 963511

PowerMac 9600/350 with **96** Mb Ram, 4 gig drive, 24x CD-rom, internal Zip drive, 17" PowerMax Trinitron monitor, commercial surge protector. Only **\$5999**, or just **\$215 per month!**



Package 863011

PowerMac 8600/300 with **48** Mb Ram, 4 gig drive, 24x CD-rom, int. Zip drive, 17" PowerMax Trinitron monitor, commercial surge protector. Only **\$4349**, or just **\$166 per month!**



Package 732011

PowerMac 7300/200 with **48** Mb Ram, 2 gig drive, 12x CD-rom, 15" PowerMax Trinitron monitor, commercial surge protector. Only **\$2829**, or just **\$114 per month!**

SUPERmac



Package S92511

SuperMac S900/250 with **96** Mb Ram, 4 gig drive, 12x CD-rom, int. Zip drive, 17" PowerMax Trinitron monitor, 8 Mb video card, commercial surge protector. Only **\$4299**, or just **\$164 per month!**



Package J71811

SuperMac J700/180 with **40** Mb Ram, 2 gig drive, 12x CD-rom, 17" PowerMax Trinitron monitor, 33.6 modem, commercial surge protector. Only **\$2549**, or just **\$103 per month!**

HOT! HOT!



Package C62011

SuperMac C600/200 with **32** Mb Ram, 2.1 gig drive, 8x CD-rom, 15" PowerMax Trinitron monitor, 33.6 modem, commercial surge protector. Only **\$1649** or just **\$66 per month!**



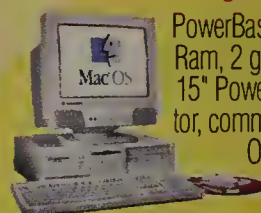
Package PT2711

PowerTower Pro 275 G3 with **96** Mb Ram, 4 gig drive, 24x CD-rom, int. Zip drive, 17" PowerMax Trinitron monitor, commercial surge protector. Only **\$5749**, or just **\$206 per month!**



Package PC1811

PowerCenter Pro 180 Tower with **48** Mb Ram, 2 gig drive, internal 16x CD-rom, internal Zip drive, 17" PowerMax Trinitron monitor, commercial surge protector. Only **\$2688**, or just **\$108 per month!**



Package PB2411

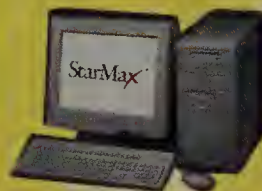
PowerBase 240 with **32** Mb Ram, 2 gig drive, 8x CD-rom, 15" PowerMax Trinitron monitor, commercial surge protector. Only **\$2069**, or just **\$83 per month!**

StarMax



Package SM6011

StarMax 6000/266 750 CHRP with **96** Mb Ram, 2 gig drive, 24x CD-rom, int. Zip drive, 17" PowerMax Trinitron monitor, commercial surge protector. Only **\$5449**, or just **\$195 per month!**



Package SM5311

StarMax 5000/300 with **48** Mb Ram, 4.3 gig drive, 16x CD-rom, int. Zip drive, 17" PowerMax Trinitron monitor, commercial surge protector. Only **\$3629**, or just **\$138 per month!**



Package SM5211

StarMax 5000/225 with **32** Mb Ram, 2.5 gig drive, 16x CD-rom, 15" PowerMax Trinitron monitor, commercial surge protector. Only **\$2349**, or just **\$94 per month!**

Each system ships with over 200 megabytes of FREE software!

• Minimum Configurations- start with the basics and customize your Mac any way you want! •

Ask about our complete Apple PowerPC systems with monitor for under \$900!

Apple	
Factory Ref Performa 6300/100 16/1.2/8x CD	\$749
Factory Ref Performa 6360/160 16/1.2/8x CD	\$859
Performa 6360/160 16/1.2/8x CD	\$949
Performa 5400/180 16/1.6 Gig/8x CD w/15" Display..	\$1349
Performa 4400/200 16/1.2 Gig/8x CD	\$1389
Performa 4400/200 32/2.0 Gig/8x CD/Modem	\$1679
PowerMac 6500/225 32/2000/12X/Zip/Ethernet	\$1666
PowerMac 6500/225 32/3000/12X/Zip/33.6 Mod	\$1718

PowerMac 6500/250 32/4000/12X/Zip/Mod	\$1955
PowerMac 6500/250 32/3000/12X/Multimedia	\$1978
PowerMac 6500/250 48/4000/12X/Zip/Mod	\$2231
PowerMac 6500/275 32/4000/12X/Zip	\$2677
PowerMac 6500/300 64/4000/12X/Modem	\$2677
PowerMac 7300/180 16 Ram/12x CD/KB	\$1699
PowerMac 7300/200 16 Ram/12x CD/KB	\$2089
PowerMac 8600/200 32 Ram/12x CD/Zip/KB	\$2599
NEW! PowerMac 8600/250 32 Ram/24x CD/KB	\$2788
PowerMac 9600/233 32 Ram/12x CD/KB	\$2849
PowerMac 9600/200MP 32/12x CD/KB	\$Call!
PowerMac 9600/300 64 Ram/24x CD/KB/Zip	\$4086

PowerMac 9600/350 64 Ram/24x CD/KB/Zip.....\$4784
We stock all 1400's, 2400's & 3400's at super low prices!

Umax SuperMac Compatibles	
SuperMac C500/180 16/1 Gig/CD/ "Lite"	\$945
SuperMac C500/200 16/2 Gig/CD/ "Lite"	\$995
SuperMac C500/200 16/2 Gig/CD/33.6 Modem	\$1095
SuperMac C600/200 16/2 Gig/CD/33.6 Modem	\$1195
SuperMac C600/240 24/2 Gig/CD/33.6 "Lite"	\$1395
SuperMac C600x/240 32/3 Gig/12xCD/33.6 Mod	\$1795
SuperMac C600x/280 32/4 Gig/12xCD/33.6 Mod	\$2195
We stock the complete lines of SuperMac, PowerComputing and Motorola! Call for your complete system quote today!	

POWER MAX

Knowledge is Power

800-613-2072

Local line: (503) 624-1827 • Fax (503) 624-1635
http://www.powermax.com • E-Mail: powermax@europa.com

Prices subject to change without notice. Prices reflect cash discount.
Credit card orders strictly verified for fraudulent use. With use of credit card as payment customer acknowledges that some products are subject to final sale.
Not responsible for typographical errors.

We accept educational and corporate purchase orders, and are experts in financing for virtually any size business!





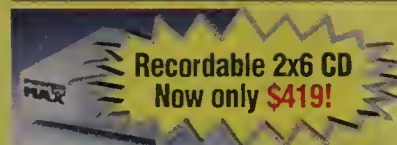
PowerMax Trinitron™ Monitors

PowerMax Trinitron™ monitors are designed specifically for the rigorous demands of the Macintosh. They ship complete with Mac-ready cables and adapters, a three year warranty, and our satisfaction guarantee: if the monitor is not just right, we'll replace it for you!

Model PM15T	25 mm dot pitch- up to 1280x1024	...	\$399
Model PM17T	25 mm dot pitch- up to 1280x1024	...	\$699
Model PM17TE+	25 mm dot pitch- up to 1600x1280	...	\$849
Model PM20T	30 mm dot pitch- up to 1600x1280	...	\$1449
Model PM20T+	W/ 25 mm dot pitch!	.....	\$1699

MacUser Labs Says: "Not only do the PowerMax monitors display good-looking images, but (they) are affordably priced!"
 "Nice price, nice image quality, nice controls – nice monitor!"
 "Four Mice! A PowerMax Power Play"

PowerMax External Hard Drives



Call about our customized high-end arrays!

•Atto •Micronet
•FWB •Optima

PowerMax External 1.2 Gig Quantum 5400 RPM	.....	\$295
PowerMax External 2.0 Gig Seagate 5400 RPM	.....	\$309
PowerMax External 2.0 Gig Quantum 5400 RPM	.....	\$329
PowerMax External 2.0 Gig Quantum 7200 RPM	.....	\$499
PowerMax External 2.0 Gig Seagate 7200 RPM AV	.....	\$599
PowerMax External 3.2 Gig Quantum 5400 RPM	.....	\$409
PowerMax External 4.3 Gig Micropolis 5400 RPM	.....	\$439
PowerMax External 4.3 Gig Quantum 5400 RPM	.....	\$439
PowerMax External 4.5 Gig Micropolis 7200 RPM	.....	\$679
PowerMax External 4.5 Gig Quantum 7200 RPM	.....	\$749
PowerMax External 6.4 Gig Quantum 5400 RPM	.....	\$569
PowerMax External 9.1 Gig Micropolis 7200 RPM	.....	\$1089
PowerMax External 9.1 Gig Quantum 7200 RPM	.....	\$1239
PowerMax External 23.2 Gig Seagate 5400 RPM	.....	\$2819

All internals including fast/wide and ultra/wide also in stock!

Only the best Macintosh

Modems	
Best Data 33.6 Fax/Modem	.....\$85.96
Best Data 56K Fax/Modem	.....\$160.09
Boca Research 33.6 Fax/Modem	.....\$161.27
Global Village Teleport 33.6 Internet	.....\$142.29
Global Village Teleport 56K Flex	.....\$178.98
Global Village Teleport 56K X2	.....\$178.98
Hayes MC336MTII 33.6 Fax/Modem	.....\$112.65
Hayes Accura 33.6 Fax/Modem	.....\$138.74
SupraExpress 33.6 Fax/Modem	.....\$82.60
SupraExpress 33.6 w/Flash ROM	.....\$157.71
SupraExpress 56E Fax/Modem	.....\$157.71
US Robotics Sportster 33.6 Mac Voice	.....\$94.91
US Robotics Sportster Internet X2 Upgr	.....\$158.05
US Robotics Sportster 56K Fax/Modem	.....\$203.67
Zoom 33.6 Fax/Modem	.....\$99.28
Zoom 56K Flex Fax/Modem	.....\$161.27

Printers	
Alps MD2010 Micro Dry	.....\$361.50
Alps MasterPiece Color Printer	.....\$651.79
Apple Color StyleWriter 2500	.....\$199.99
Apple Color StyleWriter 4100	.....\$239.89
Apple Color StyleWriter 4500	.....\$342.92
Apple Color StyleWriter 6500	.....\$475.47
Apple LaserWriter 4/600	.....\$857.43
Apple Color LaserWriter 12/660 PS	.....\$5999.99
DataProducts Typhoon 8 w/enet	.....\$4197.15
Epson Color Stylus 600	.....\$301.18
Epson Color Stylus 800	.....\$437.79
Epson Color Stylus 3000	.....\$Call!
Fargo FotoFun	.....\$457.71
GCC Elite 1212	.....\$1379.11
Hewlett Packard Refurb LaserJet 6MP	.....\$813.28
QMS Hammerhead 2060BX	.....\$2291.42
Xante Accel-A-Writer 8300/600	.....\$2349.95

Wacom Tablets	
ArtPad II 4x5 w/erasing Ultra Pen	.....\$139
ArtPad II 4x5 w/erasing Ultra Pen&Dabbl	.....\$159
ArtZ II 6x8 w/erasing Ultra Pen	.....\$309
ArtZ II 6x8 w/erasing Ultra Pen & Express	.....\$369
ArtZ II 12x12 w/erasing Ultra Pen	.....\$439
ArtZ II 12x12 w/erasing Ultra Pen & Express	.....\$489
ArtZ II 12x18 w/erasing Ultra Pen	.....\$699

We carry all Wacom Accessories, Pens and Tablets! You won't find anyone who knows more about Wacom!

Why Buy From PowerMax?

- Most orders ship within 24 hours- even customized systems
- We speak plain English- no technotalk or high pressure sales tactics
- Your system is shipped only after the personal approval of your system designer
- We offer flexible terms, and are experts on easy leasing
- We don't use voice mail- even with our expert tech support department
- We consult with you, we want to make sure what you buy is what you need

peripherals and software

Monitors	
Apple Multiple Scan 15AV	.....\$399.99
Apple Multiscan 1705	.....\$639.75
Apple Multiscan 1710	.....\$768.81
AppleVision 850	.....\$1663.43
AppleVision 850 AV	.....\$1895.66
CTX XA1451 14" 28mm	.....\$182.05
CTX VL500 15" 28mm	.....\$250.32
CTX MS600 17" 39mm	.....\$415.31
CTX EX800 20" 28mm	.....\$910.28
Hitachi SuperScan Pro 500 15" 28mm	.....\$318.60
Hitachi SuperScan Pro 620 17" 28mm	.....\$540.48
Hitachi SuperScan Pro 20" 28mm	.....\$1193.60
Hitachi SuperScn Elite 701 21" 28mm	.....\$1473.52
Mag Innovision 410V2 14" 28mm	.....\$204.82
Mag Innovision 510V2 15" 28mm	.....\$284.46
Mag Innovision DX15T-M 15" Trinitron	.....\$340.22
Mag Innovision DX700T-M 17" Trin	.....\$636.05
Mag Innovision DJ-30 21" 28mm	.....\$1534.96
Mitsubishi Diamond Scan 15VX 28mm	.....\$381.18
Mitsubishi Diamond Pro 67TXV 25mm	.....\$670.19
Mitsubishi Diam. Pro 91TXM 28mm	.....\$1478.06
Mitsubishi Megaview 33 Mult 83mm	.....\$3584.23
Mitsubishi Megaview Pro 42 96mm	.....\$8918.47
NEC XV15+ 28mm	.....\$377.76
NEC XV17+ 28mm	.....\$675.88
NEC M700 Spkrs 25mm	.....\$772.60
NEC P750 1600x1200 75Hz 25mm	.....\$869.32
NEC E1100 21" 28mm	.....\$1389.29
NEC Multisync XP37 Plus	.....\$7908.06
Nanao FlexScan FX-B5 15" 28mm	.....\$512.03
Nanao FlexScan FX-C5 17" 28mm	.....\$706.72
Nanao FlexScan TX-C7 17" 25mm	.....\$859.08
Nanao FlexScan TX-D7S 20" 25mm	.....\$1651.87
Nanao FlexScan FX-E7 21" 28mm	.....\$1705.63
Philips Magnavox 105S 15" 28mm	.....\$294.70
Philips Magnavox Bril. 105 15" 28mm	.....\$385.73
Philips Magnavox Bril. 107 17" 26mm	.....\$741.59
Philips Magnavox 201B 21" 27mm	.....\$1397.42
Radius Pressview 17SR 17" 25mm	.....\$1591.85
Radius PrecisionView 21 30mm	.....\$1649.88
Radius Pressview 21SR 21" 25mm	.....\$3160.71
Sony 100SX 15" 25mm	.....\$337.95
Sony 100SF 15" 25mm	.....\$380.04
Sony 200SX 17" 25mm	.....\$629.34
ViewSonic P810 21" 25mm	.....\$1421.17

AND WE HAVE SO MUCH MORE!

with prices and expertise

Scanners	
Agfa Snapscan w/Omnipage LE	.....\$292.89
Agfa StudioStar w/PhotoShop LE	.....\$788.89
Agfa StudioStar w/PhotoShop Full	.....\$964.33
Agfa Arcus II w/transparency adapter	.....\$1287.10
Epson ActionScanning System II	.....\$275.10
Epson ES-1000C scanner	.....\$483.57
Epson Expression 636 Executive	.....\$769.14
Epson Expression 636 Artist	.....\$962.00
Epson Expression 636 Professional	.....\$1333.11
Hewlett Packard Scanjet 5P	.....\$435.43
Hewlett Packard Scanjet 4C	.....\$760.42
LinoColor Jade	.....\$469.48
LinoColor Saphir	.....\$1713.83
LinoColor Saphir Ultra	.....\$3564.53
LinoColor Opal	.....\$5521.05
Microtek ScanMaker E3	.....\$189.73
Microtek ScanMaker E6	.....\$333.33
Microtek ScanMaker E6 Pro	.....\$518.77
Nikon AX-210 Scantouch	.....\$574.59
Nikon AX-1200 Scantouch	.....\$731.23
Nikon LS-20E Coolscan II Slide	.....\$903.97
Nikon LS-1000 SuperCoolscan Slide	.....\$1735.51
Polaroid Sprintscan 35 LE Slide	.....\$777.27
Polaroid Sprintscan 35 ES Slide	.....\$1436.62
Umax Vista S-12 w/Photo Deluxe	.....\$419.99
Verbatim S600C Scanner w/Xerox	.....\$276.29
Digital Cameras	
Agfa EPhoto 307	.....\$283.40
Apple QuickTake 200	.....\$599.99
Epson PhotoPC	.....\$339.20
Epson PhotoPC 500 w/flash	.....\$456.57
Kodak DC 20	.....\$184.99
Kodak DC 120	.....\$939.99
Nikon CoolPix 300	.....\$666.09
Polaroid PDC-2000/40	.....\$2760.52
Polaroid PDC-2000/60	.....\$3891.18
Digital Video Cards	
We sell Radius, Miro, Targa and Media 100- Call one of our video experts for the latest information & hottest prices on this cutting edge technology!	
Iomega Storage	
External Zip Drive w/cart	.....\$149.95
External Zip Drive w/3 carts & case	.....\$185.95
Iomega Jaz Drive w/cart	.....\$398.95
External Jaz Drive w/cart	.....\$349.95

we promise you'll love!

FREE FREIGHT ON SOFTWARE ORDERS!

If its on this list- you know its hot!

Adobe Type Reunion 2.0	.....\$42.11
Quicken 7.0 for Mac	.....\$42.67
Spring Cleaning 1.0	.....\$44.39
Kai's Power Goo 1.0	.....\$44.39
Claris Emailer 2.0	.....\$45.27
Marathon Trilogy Box Set	.....\$46.39
Adobe Type on Call 4.2	.....\$47.77
Claris MacWrite Pro 1.5	.....\$48.25
QuickMail Pro for Mac	.....\$52.37
DiskDoubler 4.0 for Mac	.....\$53.74
Netscape Navigator 3.0	.....\$54.62
Speed Doubler 2.0	.....\$55.84
Net Doubler 1.2	.....\$63.09
Virex 5.7	.....\$64.41
Suitcase 3.0	.....\$68.42
Stuffit Deluxe 4.0	.....\$71.26
DiskIt Pro 1.1	.....\$71.57
MYOB Accounting 7.0	.....\$73.21
Quickeys 3.5.2	.....\$86.04
Poser 2.0	.....\$124.49
Adobe TextureMaker 1.0	.....\$129.58
Adobe Streamline 4.0	.....\$129.58
Virtual PC w/Windows 95	.....\$141.65
Quickbooks Pro 4.0	.....\$183.53
Claris FileMaker Pro 3.0	.....\$184.22
Live Picture 2.5	.....\$187.41
Eudora Pro 3.1- 5 User	.....\$208.87
Debabelizer Toolbox V. 1.6.5	.....\$232.61
Adobe Persuasion 4.0	.....\$252.91
Painter 5.0	.....\$261.75
MathCad Plus Professional 6.0	.....\$269.79
Microsoft Word 6.01	.....\$310.18
Microsoft Excel 5.0	.....\$310.18
Fontographer 4.1	.....\$318.36
Canvas 5	.....\$381.89
Adobe PageMaker 6.5	.....\$449.95
Adobe Photoshop 4.0	.....\$449.95
Freehand Graphic Studio 7	.....\$461.10
MetaTools Infini-d 4.0	.....\$496.34
Adobe Premiere 4.2	.....\$504.63
Minicad 7.0	.....\$513.78
Illustrator 7.0/Streamline 4.0/Dimensions	.....\$629.23
Photoshop 4.0/Illustrator 7.0 Bundle	.....\$941.99
Photoshop 4.0/Illustrator 7.0/PageMaker	.....\$1505.21

800-613-2072

Local line: (503) 624-1827 • Fax (503) 624-1635

http://www.powermax.com • E-Mail: powermax@europa.com

"Custom Configuration Specialists"

- Dealers & International sales welcome!
- Govt., University & Corporate P.O.'s Welcome.
- Best Prices, Service & Delivery.

Web Site @ www.infinity-micro.com

4400/200 16/2GB/CD/KB	\$1295.	5200/75 8/1GIG/CD	\$945.
4400/200 32/2GB/CD/OF/KB	\$1485.	5215/75 8/1G/CD/14.4	\$949.
6100/60 8/250/CD	\$595.	5260/100 16/800/CD	\$1095.
6100/66 16/500/CD/DOS	\$995.	5300 /120 16/1GIG	\$1095.
6500/225 32/3GB/CD/3F/KB	\$1685.	5400/120 16/1.2/CD	\$1195.
6500/250 32/4GB/CD/ZIP/KB	\$1795.	6400/120 16/500/CD	\$745.
6500/250 48/4GB/CD/3F/MS	\$1995.	6112 8/250/CD	\$595.
6500/275 48/4GB/AVID	\$2579.	6200/75 8/1G/CD	\$595.
6500/300 64/4GB/12XCD	\$2579.	6220TV 16/1.2G/CD	\$639.
7100/80 8/700/CD	\$895.	6300/100 16/1.2/CD	\$675.
7100/80 16/700/CD/AV	\$995.	6320CD 16/1G/CD	\$735.
7200/90 8/500/4XCD	\$895.	6360/160 16/1.2/CD	\$995.
7200/120 16/1G/4XCD	\$1095.	6400/180 32/2G/CD	\$895.
7200/120 8/1.2/4CD/PENT.	\$1695.	6400/200 16/2.4/CD	\$1049.
7300/180 16/2GB/CD/KB	\$1895.	6400/200VE 16/2.4/CD	\$1689.
7300/200 32/2GB/CD/KB	\$2249.		
7500/100 16/1G/4XC	\$1195.		
7600/132 16/1.2/8XCD	\$1495.		
8100/100 16/1GIG/CD/AV	\$1385.		
8100/110 16/2G/CD	\$1395.		
8500/132 16/1G/4XCD	\$1595.		
8500/120 16/2GB/4XCD	\$1495.		
8500/150 16/2G/8XCD	\$1649.		
8500/180 32/2GIG/8XCD	\$2185.		
8600/200 32/2GB/CD/zip/kb	\$2695.		
8600/300 32/4gb/12xCD/z/k	\$3445.		
9500/180MP 32/2G/8XCD	\$2495.		
9500/200 32/2GIG/8XCD	\$2595.		
9600/200 32/4GB/CD/K8	\$2695.		
9600/200MP 32/4GB/CD/KB	\$3395.		
9600/233 32/4GB/12XCD	\$3049.		
9600/300 64/4GB/16xCD/z/k	\$4195.		
7250/120 16/1GB/CD	\$1195.		
7250/120 16/2GB/CD/Internet	\$1495.		
7350/200 32/4GB/CD/Share	\$3445.		
8550/132 24/2G/CD/DAT	\$2895.		
8550/132 24/2G/CD/DI/AS	\$3395.		
8550/200 32/2GB/CD/AS	\$4095.		
8550/200 32/2GB/CD/DAT	\$4295.		
9150/120 16/1GB/CD	\$1395.		
500/132 32/0/CD	\$6595.		
500/132 32/2GB/CD/DAT	\$7845.		
700/150 32/1G/CD	\$7495.		
9650/233 48/4GB/CD/A.S.	\$6295.		
9650/300 48/4GB/CD.INT.	\$5495.		

POWER COMPUTING

PTP 225MHz 16/2GB/AV/8XCD/IMS 8MB /KB	\$ 2375.
PTP 200MHz 16/2GB/AV/8XCD/IMS 8MB /KB	\$2195.
PTP 180MHz 16/2GB/AV/8XCD/IMS 8MB/KB	\$1995.
PowerCTR 180MT 180MHz 16/2GB/8XCD/K/2	\$1599.
PowerCTR. 166MT 166MHz 16/2GB/8XCD/Kb	\$1399.
PowerCTR. 150LP 16/1GB/8XCD/KB	\$1095.

(PTP=PowerTower Pro Series!)

EZ QUEST JAZZ 1GIG \$349.
SONY 2X6CDR DRIVE \$ 445.

• Govt. & university P.O.'s welcome • Prices are cash discounted and are subject to change without notice. We accept Visa, Mast. & Amex. •

One stop shopping for all your
800 • 589 • 1234
TEL 310•470•9426

software & hardware needs!

FAX 310•470•4956

"We Match, We beat, We deal." CALL US LAST!!!

MONITORS

Apple 14" /15" Multiscan	\$249./\$299.
Apple 15"AV Multiscan	\$345.
Apple 17" Multiscan	\$595.
Apple 1705/1710	\$585./\$745.
Apple 1710AV Multiscan	\$ 795.
Apple Vision 850 20"	\$1445.
Apple Vision 850AV 20"	\$1795.
Apple 20" Multiscan	\$1095.
Magnavox 20" Color	\$895.
Radius PrecisionView 21"	\$1695.
Radius PressView 17SR	\$1595.
Radius PressView 21SR	\$2995.
Radius ProSense Clairator	\$675.
RasterOps MC20 20".28	\$1245.
RasterOps MC-801 21"	\$1595.
RasterOps MC-801HR	\$1749.
RasterOps M7515 19"	\$1095.
SuperMac 21" Color	\$895.
Sony 100SX/100SF	\$335./\$379.
Sony 200SX/200SF	\$619./\$689.
Sony 17SE2	\$799.
Sony 300SF-20"	\$1329.
ViewSonic 17GA Multi	\$619.
ViewSonic 17EA-17"	\$589.
ViewSonic GT-770 17".25	\$649.
ViewSonic GT-800 20"	\$1145.
ViewSonic PT-810 21".25MM	\$1549.
ViewSonic P810 21".25MM	\$1349.
ViewSonic P815 21".25MM	\$1529.
ViewSonic G810 21".25MM	\$1245.
ViewSonic PT-813 21".28	\$1489.

PRINTERS

StyleWriter II	\$179.
StyleWriter 1200/1500	\$99./129.
StyleWriter 2200	\$389.
StyleWriter 2400/2500	\$149./189.
StyleWriter 4100 Color	\$239.
StyleWriter 4500 Color	\$339.
StyleWriter 6500 Color	\$469.
LaserWriter 4/600	\$695.
LaserWriter 12/640	\$1379.
LaserWriter 12/600	\$1689.
LaserWriter Color 12/660New	\$4995.
LaserWriter Color 12/660Demo	\$2995.
Epson Stylus 600	\$279.
Epson Stylus 800	\$419.
Epson Stylus Pro-XL	\$1295.
Epson Stylus 3000 Color	\$1669.
Fargo Primera Pro	\$1095.
Fargo Pictura 310	\$2992.
Fargo Pictura 310Ethernet	\$3499.
Fargo PostScript option	\$295.
Gcc Elite XL-1212 Laser	\$1089.
Gcc Elite XL-608	\$2089.
Gcc Elite XL-616	\$2345.
Gcc Elite XL-808	\$2699.
Gcc Elite XL-1208	\$3895.
HP Deskjet 870CXI	\$389.
HP Deskjet 1600CM	\$1585.
HP LaserJet 5MP	\$645.
HP LaserJet 6MP	\$875.
HP LaserJet 4MV	\$2195.
HP Laser 5M	\$CALL
HP Laser 5SIMX	\$3395.

MOTOROLA STARMAX

3000/180 16/1.2GB/8XCD	\$ 1195.
3000/180 32/25.6GB/8XCD	\$1345.
3000/200 16/1.2GB/8XCD	\$1429.
3000/200 32/2.56GB/8XCD	\$1599.
4000/160 16/1.2GB/8XCD	\$1449.
4000/160 32/2.5GB/8XCD	\$1649.
4000/200 16/1.2GB/8XCD	\$2099.
4000/200 32/2GB/8XCD	\$2199.

SOFTWARE PACKAGES

Adobe Photoshop 3.05	\$ 345.
Adobe Illustrator 6.0	\$ 279.
Adobe Pagemaker 6.5	\$ 279.
Adobe After Effects	\$1245.
Quark Express package	\$ 649.
Microsoft Office package	\$ 295.
Electric Image Broadcast	\$2295.
Lightwave 3D 5.0	\$1095.

Media & Keyboard

Iomega Zip drive	\$149.
Iomega Jazz 1GB drive	\$395.
EZ-QUEST Jazz 1GB Dr.	\$329.
MacAlley Extended KB	\$49.
Apple Extended Keyboard II	\$119.

PowerMac

16M8 Dimms	\$79.
32M8 Dimms	\$139.
64M8 Dimms	\$289.

PowerBook

16MB card	\$79.
32M8 card	\$139.
64MB card	\$289.
128MB card	\$1029.

Leasing services also available.

GE 3 YEAR ON-SITE WARRANTY

\$ 701 To \$ 1200	\$135.95	\$1201 To \$ 2000	\$165.95	\$ 2001 To \$ 3000	\$189.95	\$3001 To \$ 4000	\$219.95	\$ 4001 To \$ 5000	\$249.95
-------------------	----------	-------------------	----------	--------------------	----------	-------------------	----------	--------------------	----------

Apple DAYSTAR
Largest & Most Complete Mail order Source!

2289 Westwood Blvd. Los Angeles, CA. 90064

Email us at: Infinity2@earthlink.net

Web Site @ www.infinity-micro.com

APPLE RELATED CARDS

Centris 610/660AV nubus adapter	\$19.
Apple 486DX-6100 Dos card	\$99.
Apple Pentium 100Mhz card	\$595.
IMS Twin Turbo 8MB PCI	\$469.
ATI Xclaim-VR 4Mb card	\$279.
Precision Color 24/1600	\$445.
Radius Thunder30-1600 6MB	\$649.
Radius Thunder Color/30-1600	\$1899.
Radius Thunder Power/30-1600	\$545.
Radius Thunder Power/30-1920	\$795.
Radius Thunder 3D Pci card	\$1845.
TrueVision Targa 1000 Pci	\$1649.
TrueVision Targa 2000 Pro Pci	\$2995.
TrueVision Targa 2000 Pro demo	\$2395.
Targa 2000N 24Bit NTSC	\$1495.

SCANNERS

AGFA Transparencl option	\$379.
AGFA StudioScan II Color	\$795.
AGFA Arcus II w. transparencl	\$1729.
EPSON ES-1000C COLOR	\$585.
Epson Exp. 636 Executive	\$849.
Epson Exp. 636 Artist 600dpi	\$1285.
Epson Exp. 636 Professional	\$1695.
Microteck Scanmaker E3	\$345.
Microteck ScanMaker E6 STD	\$569.
Microteck ScanMaker E6 Pro	\$845.
Microteck ScanMaker III	\$1195.
Microteck ScanMaker 35T Plus	\$745.
Microteck ScanMaker Internet	\$565.
Umax Astra 600S 300dpi	\$249.
Umax Astra 1200S 600dpi, P.D.	\$429.
Umax Astra 1200S 600dpi, Pshop	\$495.
Umax PowerLook II w. UTA	\$1249.

Used powerbooks

160/180/540/230/280

all Available in stock please call.

Trade in

your
PowerBooks
for a Newer
Model.



Apple Color Laser
12/660 Printer

~~\$4999.~~
\$2999.

Demo unit

Includes: ✓ New toner kit
✓ 240HD
✓ 28MB Memory



1400C-117
32/1.2/6XCD
33.6 PCMCIA FAX MODEM
\$2395

MONITORS

Trinitron™ Super Sale	
BUY ANY CPU... Add a 17" monitor for	200.00
17" Hi-Res. Trinitron Mtr (R)	325.00
17" Std.-Res. Trinitron Mtr (R)	285.00
17" MultiScan Monitors from	399.00
Apple 15" MultiScan Mtr (U)	229.00
Apple 14" MultiScan Mtr (U)	179.00
Apple 13" RGB Trinitron Mtr (U)	179.00
40MB 3.5" TH, SCSI (N)	29.00
160MB 3.5" IIII, SCSI (N)	69.00
Ext. Hard Drive Enclosure (N)	49.00

PRINTERS

12X CDROM	\$99	\$149
External CDROM Enclosure (N)	39.00	
Apple 600i 4x CD-ROM (N)	99.00	
CLEAR ADB Mouse (N)	25.00	
Radius ADB Mouse (N)	16.50	
Radius Ext. ADB Keyboard (N)	45.00	
Apple Ext. I. ADB Ext. Key (U)	29.00	
ALPS		
Desktop Trackpad		
Glidepoint	\$19.50	

COMPUTERS

P631 4/0/CD (U)	\$349.00
monitor not included	
P631 8/850/CD/M(U)	499.00
Mac SE 4/120 w/keyboard (U)	149.00
Mac SE/30 4/160 w/keyboard (U)	299.00
Mac LC 4/40, 13" mtr & key(U)	249.00
Mac Ilex 4/160, 13" mtr & key(U)	299.00
Mac IIsi 5/160, 13" mtr & key(U)	299.00
Mac Ilei 4/160, 14" MS & key(U)	399.00
PB Duo 250/280 (U)	399/499
PB Duo 2300c 36/750MB (R)	1275.00
PB Duo 2300c 36/1.1GB (R)	1399.00

KEYBOARDS

P6116 8/700/CD E-net (R)	699.00
P6200 8/1.2/CD/14.4 modem (R)	699.00
P6300 16/1.2/CD/28.8 modem (R)	799.00
P6400 16/1.2/8xCD/28.8 modem	CALL
P6400 16/2.6/8xCD/28.8 modem	CALL
ImageWriter II/LQ (U)	79/99
LaserWriter IInt/Intx (U)	299/399
Ext. 28.8bps modem	
NEW \$49.00	

CABLES

MacAlly • UMAX
PowerComputing
Motorola • Apple
BUY/SELL/LEASE
We accept...
School & Gov't POs
V/MC/AMEX/DISC

www.poweron.net

Rocklin, CA
(916) 652-1880 • (916) 652-1881 fax

800-673-6227

COMPUTER SERVICES

FANTASTIC DEALS ON ALL POWER PC's!

Umax SuperMac C500

- **POWERFUL 603e PROCESSOR!**
- 180 MHz Processor
- 16 MB RAM
- Multimedia CD-ROM Drive
- 1.2GB Hard Drive
- Fast PCI Expansion Slots

\$799*



Motorola StarMax Series 3000

- **AWESOME MOTOROLA WARRANTY!**
- 16 MB RAM
- 256 Level-2 Cache
- Multimedia CD-ROM Drive
- 1.2GB Hard Drive
- 3 Fast PCI Expansion Slots

\$999*



PowerMac 8500

- **POWERFUL 604 PROCESSOR!**
- Up to 233 MHz
- Video Capture In and Out!
- 16 MB RAM
- 256 Level-2 Cache
- Multimedia CD-ROM Drive
- 2.0gb Hard Drive
- 3 Fast PCI Expansion Slots

\$1499*



PowerTower Pro 200MHz

- **POWERFUL 604e PROCESSOR!**
- Fastest RISC Processor
- 16 MB RAM (expandable to 1GB)
- 1MB Level-2 Cache
- Multimedia CD-ROM Drive
- 2GB AV Hard Drive
- 6 Fast PCI Expansion Slots
- 8MB IMS Twin Turbo Graphics Card

from **\$1999***



Radius 81/110

- **FASTEST NUBUS MACHINE!**
- PowerMac NUBUS
- 16 MB RAM
- 256 Level-2 Cache
- Multimedia CD-ROM Drive
- 750 MB Hard Drive with NUBUS card purchase

\$999*



PowerMac 7500

- **POWERFUL 604 PROCESSOR!**
- Up to 180 MHz
- 16 MB RAM
- 2.0gb Hard Drive
- 256 Level-2 Cache
- Multimedia CD-ROM Drive
- 3 Fast PCI Expansion Slots

\$1299*



Macintosh IICx With 15" Monitor

\$299



*With Qualifying Monitor Purchase, All Units Factory Recertified, Up to 4 Year Warranties Available

MONITORS

20" COLOR MONITORS

20/19" Trinitron Technology

\$899

Radius PrecisionColor 19

\$849

20" Multi-Resolution **NEW!**

\$1329

Radius SuperMatch 20 Plus

\$999

Radius PrecisionColor 20v

\$1299

Radius Intellicolor 20

\$1390



21" COLOR MONITORS

21" DiamondTron Monitor

\$1299

RasterOps Superscan MC21 **NEW!**

\$1599

Ikegami 21" Diamondtron **NEW! 2 YEAR WAR**

\$1599

Radius Multiview 21

\$1489

Radius PrecisionView 21

\$1599

Radius 21" PressViews

from **\$1559**

SuperMac 21" Color Display

\$1199

17" COLOR MONITORS

17" SuperMac Multi-Scan

from **\$499**

E-machines T16 II

\$529

Radius PrecisionView 17

\$599

Radius PrecisionColor Display 17

\$699

Radius PressView 17sr **NEW!**

\$1799



15" COLOR MONITORS

PrecisionColor 15" Pivot

\$399

Radius 15" Pivot

\$199

Portrait Display Labs 1700 **NEW!**

\$859

GRAYSCALE MONITORS

Radius Full Page Display

\$199

Radius Two Page Grayscale Display

\$499

NEC, Sony, Mitsubishi, Viewsonic, Apple Monitors Also Available!!

Need cards to drive your Monochrome/Grayscale Monitors?

CLEARANCE

NO REASONABLE OFFER WILL BE REFUSED!

Emachine video card 832x624

\$85

Spectrum 24 Series III 1024x768

\$109

Supermac Thunder 8 Accel. 1152x870

\$99

Thunderstorm for Photoshop Acceleration

\$75

Atto Silicon Express 4 SCSI Accelerator

\$199

Video Spigot IIsi and LC (video capture)

\$89

25Mhz Speed Card for Se

\$79

Superview/Powerview (2pg's on Pwrbk & SE)

\$99

Radius Rockets Accel. for Mac II Series

\$159

Radius 19" Trinitron w/ Nubus card

\$799

16" Color Monitors

\$249

ALL SALES FINAL ON CLEARANCE ITEMS!!!!

DIGITAL VIDEO

BROADCAST QUALITY BLOWOUT!

Because of special purchasing opportunities, CRA Systems is now able to offer Broadcast Quality digital video products at unbelievably low prices! Quantities at these prices are very limited. CALL NOW!!

Video Vision Studio

from **\$999**

Video Vision Telecast

from **\$1599**

Video Vision Studio Array

\$1299

- 4gb Array with SCSI Accelerator

Full Motion Video Workstation

\$2999

- Radius 81/110 & VideoVision
- 17" Multi-Scan Monitor
- 32mb RAM, 2GB AV Hard Drive, CD ROM

Media 100QX and 100QX Component

\$CALL

TRUEVISION Targa 2000 PCI

\$2699

Video Spigot Cards

\$99

- Spigot II Tape, Spigot Nubus, LC and IIsi

Video Spigot Power and Pro AV

from **\$399**

- FULL MOTION, full screen capture and playback

Video Vision Basic

\$799

MiroMotion, Bravado products available. Call for pricing.

GRAPHICS CARDS

PCI VIDEO CARDS

IMS Twin Turbo 128

\$199

Radius PrecisionColor 8/1600

\$399

ATI XClaim VR 2mb

\$189

Radius Thunder 3D

\$CALL

ThunderColor

\$CALL

ThunderPower

\$CALL

NUBUS VIDEO CARDS

1600x1200 (21" or greater resolution)

from **\$599**

Thunder IIGX and Thunder IVGX series

from **\$299**

1152x870 (21" resolutions)

from **\$199**

PrecisionColor 24x, Spectrum Power 1152, Prism GT

from **\$99**

1024X768 (20" resolutions)

PrecisionColor 24xk, Spectrum 24, Paintboard Lightning

832x624 (17" resolutions)

PrecisionColor 24xp, Futura Series

Se/30, LC, or PDS bus?? Call Us!!

THOUSANDS OF CARDS IN STOCK!!! Call for prices on models not listed.

Photoshop Accelerators

\$199

Color Calibrators

\$99



COMPUTERS

AWESOME POWER!

Power PC 750 MACH 5

only **\$2999***

- 32 mb RAM
- 2.0gb FAST & WIDE Hard Drive
- Multimedia CD ROM

Power PC 604e 300

only **\$2499***

- 32 mb RAM
- 2.0gb FAST & WIDE Hard Drive
- Multimedia CD ROM

APPLE COMPUTER

PowerMac 8500 16mb/2gb/cd

\$1499*

PowerMac 8100 16mb/700mb

\$1199*

PowerMac 8600/200 32mb/2.0gb/cd

\$2499*

PowerMac 9600/300 64mb/4.0gb/cd

\$4399*

PowerMac 6400/180 16mb/1.2gb/cd

\$899*

Macintosh IICx w/15" Full Page Monitor

from **\$299**



POWER COMPUTING CORPORATION

PowerTower Pro 200 16mb/1.2gb

\$1999*

PowerTower 180 16mb/1.2gb

\$1599*

PowerCenter 180lp 16mb/1.2gb

\$799*



UMAX COMPUTER CORPORATION

SuperMac C500/180

\$799*

SuperMac C600/180

\$999*

SuperMac J700/180

\$1649*

SuperMac S900/200

\$2309*

MOTOROLA COMPUTER GROUP

StarMax 3000/160

\$999*

StarMax 4000/200

\$1499*

StarMax 5000/225

\$1899*

Call for prices on models not listed!
* with purchase of qualifying instock monitor

PRINTERS

Apple LaserWriters

- Laserwriter, IINT, Select 360, Pro 630 plus many more!!

from **\$299**

QMS 860 Hammerhead

\$1899

- 600 dpi 11 x 17 Tabloid Canon Engine
- Same Technology as HP4mv

QMS 825 8ppm Canon Engine, Postscript IBM/Mac

\$399

Supermac Proof Positive

from **\$1999**

- Full Page and Two Page Options available
- Dye-Sub Color

Epson, Hewlett-Packard & Tektronix Available!!

NEW AND FACTORY RECERTIFIED

4YEAR EXTENDED WARRANTIES AVAILABLE ON MOST PRODUCTS

CRA Systems, Inc. www.crasystems.com 800-375-9000



CRA Systems, Inc. 300 South 13th St., Waco, TX 76701 Monday thru Friday 9AM to 7PM CST Saturday 10AM-4PM Sales Dept. Only
Domestic Sales sales@crasystems.com Fax 254.750.9050 Consultants/Dealers 254.754.2120 International Sales 254.754.2120
Prices reflect 2% cash discount. Prices subject to change. Not liable for typographical errors. Dealers and consultants call for quantity pricing. We ship anywhere.
All Monitors, Printers, and CPU's are Factory Recertified unless otherwise stated. Call for latest pricing & availability on NEW Options.

FedEx

CIRCLE 430 ON READER SERVICE CARD

WE GUARANTEE
THE BEST PRICES!

MediaGuide

Prices Listed
Reflect a 3%
Cash Discount

BUY/SELL/TRADE

Mac Plus 1/0.....\$59	SE 4/40.....\$79	Powerbook 520 12/160/19.2.....\$899
SE/30 8/40.....\$169	Classic 4/40...\$139	Powerbook 540c 12/320/19.2.....\$1099
Mac II 4/40/Video...\$69	LC 4/40.....\$119	PB 5300cs / 5300c / 5300ce.....LOWEST!
Ilcx 8/40/Video.....\$129	Ilisi 5/40.....\$129	Apple 12" Mono.....\$89 Apple 12" RGB...\$119
Ilci 8/80.....\$169	Ilx 8/80/Video...\$149	Apple 13" RGB...\$149 Apple 14".....\$179
Ask about our bundle specials for Ilisi, Ilcx, or Ilci's...from only \$299!		
Mac Ilfx 8/210.....\$249	Ilvx 8/80.....\$199	Assorted 20" Color monitors.....from \$399
Q605 8/160.....\$349	Q610 16/230...\$399	Imagewriter II.....\$99 Laserwriter.....\$139
Q630 16/250.....\$399	C650 16/230...\$399	Laserwriter IIInt...\$249 LW IIIntx.....\$299
Q650 16/230.....\$449	Q700 8/230.....\$449	External hard drive case w/cable.....\$39
Q800 16/230.....\$479	Q900 8/230.....\$549	Seagate 2 gig int. hard drive (8.5ms).....\$299
Quadra 840AV 16/230/CD.....\$649		8-bit NuBus video card...\$39 24-bit...\$99
6100/60 8/230/CD.....\$549		Ethernet cards...\$29 Ilisi NuBus adapt...\$39
7100/80 8/230/CD.....\$699		2x CD-ROM internal.....\$29 / 2x external.....\$69
7200/90 8/500/CD.....\$799		800K floppy.....\$25 1.44 floppy from \$69
Mac Clones in stock...SUPER HOT DEALS !!!		
Huge selection of Power Macs.....LOWEST!!		
PB 140 4/40.....\$299	PB 145 8/40...\$449	Apple Extended Keyboard.....\$29
Powerbook 180 8/120/14.4.....\$699		120Mhz 604 upgrade daughtercard.....\$29
Duo 230 12/120/14.4.....\$499		256K Level-2 cache for 6100 & 7100.....\$12
Duo 270c 12/240/14.4.....\$699		Logic boards & Power supplies — CALL!
Duo 280c 24/320/14.4.....\$799		Parts, Accessories, other CPUs — CALL!
Apple Duo Dock II.....\$299		MS Word 5.0...\$39 OmniPage Pro 5.0...\$79
		MS Excel 4.0...\$49 MS Office 4.2.1...\$149
		30- and 72-pin SIMMs: BEST PRICES!

Call toll free: (800) 463-0686

Fax: (303) 788-0651 • Local & Int'l: (303) 788-1400
Hours: M-F 9-6, SAT 10-5 MST • 3294 S. Acoma St. #2B, Englewood CO 80110
E-mail: Sales@MediaGuide.com • http://www.mediaguide.com

CIRCLE 418 ON READER SERVICE CARD

computers...for less...

www.computere

change.net

CIRCLE 462 ON READER SERVICE CARD

Apple StyleWriter 1200

- 360x360 dpi Ink-Jet
- Black & White
- 90 day warranty
- Refurbished
- Add Printer cable and Ink for only \$29

ONLY \$79

Apple 13" & 14" Monitors

- 13" RGB - \$179
- 14" Color RGB - \$229
- Trinitron tubes

FROM \$179

Apple CD-ROM Bundles

CD600i 4x CD-ROM \$99
add Atlantic Tech speakers only \$49

CD1200i 8x CD-ROM \$149
add Atlantic Tech speakers only \$29

- M105/M110 System
- Subwoofer/Satellite
- Ranked by CNET
- Add stands for \$19

FROM \$99



MacWorks 800-482-2705

"Low Prices, Great Service... And A Monkey!"

Voice 913-599-6227 • Fax 913-599-6111

Apple PowerMac 6100 DOS Card Kit

- DOS Included
- All manuals/cables included
- Retail Box
- Full Warranty
- Fits 6115/6116 also
- Brand New in box

ONLY \$99

Duo 2300c 8/750

- 100Mhz 603e PPC
- Active Matrix Color
- Add Dock for \$299
- Add 14.4 modem for \$50
- Add 12MB RAM for \$100

\$999

PowerBook Duo 280c

- 12/320
- 33Mhz 68040
- Active Matrix Color
- Add Dock for \$299
- Add 14.4 modem for \$50
- Add 12MB RAM for \$100

\$649

Mac Ilisi, Ilcx, Ilci Bundles

- II 4/40/Video \$199
- Ilx 4/40/Video \$229
- Ilcx 4/80 \$279
- Ilisi 5/80 \$299
- Ilci 4/80 \$349

All Bundles Include:

- NuBus Ethernet Card
- 13" Apple RGB High Resolution Display with Tilt Swivel Base
- Apple Extended II Keyboard & Mouse
- Atlantic Technology Sub/Satellite Speakers
- Add 4MB of RAM to any bundle \$29
- Add 16MB of RAM to any bundle \$99

FROM \$199

PARTS & ACCESSORIES

Manual Inject - floppy	\$79
Auto Inject - floppy	\$99
GV 33.6 Speakerphone - Modem	\$99
Apple Design Speakers - I	\$69
Imega Zip Drive - Internal	\$99
Apple MPEG Card - for 630/6200/6300/5200	\$49
PB 19D Video Out Card - 8-bit color	\$79
PB 19D Infrared Card - Upgrade	\$29
PB 190/5300 8MB - RAM Module	\$69
PB 500 BMB/Duo BMB - RAM Module	\$39
Ilcx/650/7100 - power supply	\$89
Duo Dock - power supply	\$119
800/B40/B100 - power supply	\$129
Focus L-TV Pro - Mac RGB to TV converter	\$99

2GB Apple Hard Disk Seagate or Quantum

- Apple PROM drives
- 5400 RPM
- 3.5" 1/3 Height
- SCSI interface
- Will Work in most machines

Quantum
Seagate

- Apple IDE 3GB only \$199
- Quantum Mechanism only

ONLY \$199

APPLE 604 UPGRADE CARDS for PowerMac 7500, 7600, 8500 and 9500

- 120Mhz \$29
- 132Mhz \$69
- 150Mhz \$129
- 256K Cache \$69
- 512K Cache \$99



INCREDIBLE! FROM \$69

SEE OUR WEB PAGE FOR FULL LINE OF PRODUCTS

e-mail: sales@macworks.com • web: http://www.macworks.com/

Prices Subject to Change • All Prices Represent 2% Cash Discount • We only ship FedEx • *Denotes Refurbished or Used

CIRCLE 444 ON READER SERVICE CARD

APPLE VISION 20"

850 DISPLAY

\$1449

Power Mac 8600
300Mhz/32/4GB/24xCD/KB
\$3099

Performa 5400
180Mhz/16/1GB/CD/KB
\$1369

POWERMACS

► 9600

350Mhz 604e/64/4GB/24xCD/KB\$4499
300Mhz 604e/64/4GB/24xCD/KB\$3849
233Mhz 604e/32/4GB/12xCD/KB\$2899
200 Mhz MP604e/32/4GB/12xCD/KB\$3379
200 Mhz 604e/32/4GB/12xCD/KB\$2699
9500
200Mhz 32/2GB/CD*\$2199
180Mhz MP 32/2GB/CD*\$2379



► 8600

300Mhz 604e/32/4GB/24XCD/L2\$3099
250Mhz 32/4GB/24XCD/1MB Cache\$2999
200Mhz 604e/32/2GB/12XCD/L2\$2679

► 7300

200 Mhz 604e 32/2GB/12xCD/L2\$2099
180Mhz 604e 32/2GB/12xCD/PC COMPATIBLE\$2849
180Mhz 604e 16/2GB/12xCD/L2 Cache\$1779

► 6500

300 Mhz 32/4GB/12XCD/L2/Video\$2449
250Mhz 48/4GB/12XCD/L2/KB/MS\$2049
250Mhz 32/4GB/12XCD/L2/KB\$1799
225 Mhz 32/3GB/12XCD/L2\$1679

► 4400

200Mhz 16/1GB/CD/L2 Cache/KB\$1095
200Mhz 32/2GB/CD/L2 Cache/KB\$1549
CALL FOR OLDER MODELS OF POWERMAC

PERFORMAS

5400 180MHz/16/1GB/CD/KB\$1379
5400 120MHz/16/1GB/CD*\$999
5260 120MHz/8/800/CD/KB*\$899
6400 180MHz/16/1.6GB/CD/KB\$1099/\$939*
6400 200MHz/16/2GB/CD/KB\$1099
6360 160MHz/16/1GB/CD/KB\$989/\$879*
6200 75MHz/8/1GB/CD/KB*\$599

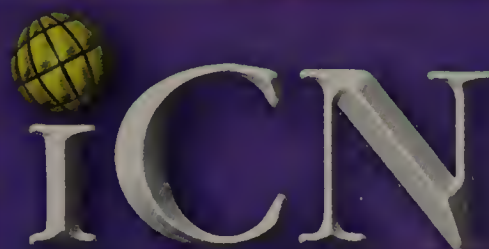
UPGRADES

WITH ORIGINAL APPLE LOGIC BOARD

PM 8500 LOGIC BOARD UPGRADE
FROM Q800, Q840AV, PM 8100 TO 8500\$999
PM 7600 LOGIC BOARD UPGRADE
FROM PM 7200 TO 7600\$699
PM 5300/6300 LOGIC BOARD UPGRADE (100MHZ)
FROM Q630, PF630, PF 5200 & 6200\$399

TOSHIBA, MOTOROLA AND UMAX
AUTHORIZED DEALER

Prices Subject to Change Without Notice
All Prices reflect 3% Cash Discount • * Refurbished



INNOVATIVE COMPUTER & NETWORKING, INC.

POWERMAC 8600
250Mhz 604e 32/4GB/24xCD/KB
\$2999

POWERBOOK 3400c
200Mhz 16/2GB/CD
\$3399

UMAX

SUPER MAC S900L/225 Mhz 604e/32/2.1GB/8XCD/1MS 8MB\$2999
SUPER MAC S900/250 Mhz DP 604e/32/2x2GB/12XCD/ZIP/KYBD\$6035
SUPER MAC S900/250 Mhz 604e/32/2GB/8XCD/ZIP/KYBD\$3349
SUPER MAC S900/233 Mhz 604e/32/2GB/8XCD/KYBD\$2649
SUPER MAC S900/180DP Mhz 604e/32/2GB/8XCD/KYBD\$2665
SUPER MAC J700/180 Mhz 604e/24/2GB/8XCD/KYBD\$1639
SUPER MAC C600/240 Mhz 603e/24/2GB/8XCD/KYBD/Modem\$1360
SUPER MAC C600/180 Mhz 603e/16/1GB/8XCD/KYBD/Modem\$995
UMAX AUTHORIZED SERVICE CENTER

MOTOROLA

AMT 3200 603e/200Mhz/32/2.5GB/8XCD/256K/28.8Mod\$1599
ADT 3200-6 603e/200Mhz/16/1.2GB/8XCD/256K\$1299
Motorola Authorized Dealer

POWERBOOKS

3400c 240 Mhz/16/3GB/CD\$4349
3400c 200 Mhz/16/2GB/CD\$3399
3400c 180 Mhz/16/1.3GB/CD\$3399
2400c 180 Mhz/16/1.3GB\$3179
1400cs 133 Mhz /16/1.3GB/CD\$2299
1400c 166 Mhz/16/2GB/CD\$2799
1400c 133 Mhz/16/1GB/CD\$2449
DUO 2300c 100Mhz/8/750*\$999
Apple Emate 300\$759
PowerBook 100 & 500 Series In Stock

Duo Upgrade
200 Series To 2300 Series
\$549

APPLE PROCESSOR UPGRADE
7600/8500/9500 TO
132MHz/150/180/200/200MP/233
\$135/\$199/\$599/\$629/\$1249/\$729

FOR CURRENT PRICES VISIT OUR WEB SITE AT:
<http://www.icni.com>

1.888.505.2211

Fax:(310) 445-6611 Tel:(310) 445-6600
FAX TOLL FREE FROM JAPAN: 00-31-114211
2045-B S. Barrington Ave. LA, CA 90025

POWERMAC 9600
300Mhz 604e 64/4GB/24xCD
\$3849

POWERBOOK 3400C
240 Mhz/16/3GB/CD
\$4399

POWERMAC 4400
200Mhz 16/1GB/CD/L2
\$1095

MONITORS

APPLE VISION 850\$1449
APPLE 20" Multi*\$1099
APPLE VISION 750\$779
APPLE VISION 750 AV\$859
APPLE 1705 Multi\$599
APPLE 15" AV Multi\$369
APPLE 15" Multi\$339
NEC XV15"+/XV17"+\$399-699
NEC M500/M700\$399-759
NEC 21" P1150/E1100\$1789-1489
SONY 15" 100SX/15"100SF\$379-389
SONY 17" 200SX/17"200SF\$619-679
SONY 20" 300SF/ 20"SE2\$1569-1879
VIEWSONIC 15" GS/ GA\$359-399
VIEWSONIC 17"GA/ PT770\$659-749
VIEWSONIC 20" P810/ P815\$1389-1589
VIEWSONIC 20" PT813/ G810\$1599-1299



PRINTERS

APPLE LaserWriter COLOR 12/660\$3499
APPLE LaserWriter 12/640\$1349
APPLE LaserWriter 8500\$CALL
APPLE LW 16/600\$1649
APPLE LW 4/600\$699
APPLE SW Color 2200\$279
APPLE SW Color 2500\$169*
APPLE SW 1500\$159
APPLE SW Color 4100\$249
APPLE SW Color 4500\$339
APPLE SW Color 6500\$449
HP LASER JET 4MV Prints 11x17\$2299
EPSON Stylus 600/800 Color\$289/\$429



SCANNER

AGFA Arcus II Transp/Full Photoshop\$1499
AGFA Studioscan IIsi Photo/ LE\$479
MICROTECH Scanmaker V300/E3\$189/\$159
UMAX Powerlook II Transp/Full Photo.\$1299
UMAX ASTRA 1200S - Photo Deluxe/Full Photoshop\$439/\$519
UMAX ASTRA 600S / Photo Deluxe.\$249
EPSON Expression 636 Executive/Artist/Pro\$749/\$929/\$289
VISIONEER PaperPort-VX Strobe\$289
CALL FOR PRICES ON OTHER MODELS

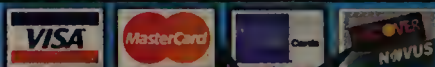
APPLE PARTS

Original Apple 12xCD-ROM\$199
Original Apple 8xCD-ROM\$129
ORIGINAL APPLE 8XCD FOR PB 1400 SERIES\$199
We Carry All Apple Parts In Stock

MICRO OUTLET

http://www.microoutlet.com
email:sales@microoutlet.com

800 • 801 • 4MAC FAX • 310 • 533 • 0501



Free Utilities
CD's With
Every CPU
Order!

POWER MAC 9600/8600 SERIES



Power Mac
8600/300
32/4GB/24XCD/ZIP
\$3449.00

9600/350	64/4GB/24XCD/L2/Zip	\$ 4949
9600/350	64/4GB/24XCD/L2	4849
9600/300	64/4GB/24XCD/L2/Zip	4249
9600/233	32/4GB/12XCD/L2	3079
9600/200	MP 32/4GB/12XCD/L2	3525
9600/200	32/4GB/12XCD/L2	2749
8600/300	32/4GB/24XCD/L2/Zip	3449
8600/300	32/4GB/24XCD/L2	3389
8600/200	32/2GB/12XCD/L2/Zip	2665

POWER MAC 4400/7300 SERIES



Power Mac
6500/300
48/4GB/CD/ZIP/MDL
\$2385.00

4400/200	32/2GB/12XCD-S8US	\$ 1625
4400/200	16/2GB/Ethernet	1289
7300/200	32/2GB/12XCD/L2	2325
7300/180	16/2GB/12XCD/L2	1869
6500/300	48/4GB/CD/ZIP/33.6	2385
6500/275	32/4GB/CD/CREAT STUDIO	2379
6500/250	48/4GB/CD/ZIP/33.6/SB	2099
6500/250	32/4GB/1CD/ZIP/33.6/HB	1825
6500/225	32/3GB/12XCD/33.6/HU	1659

POWERBOOKS



Power Book
3400C/240
16/2GB/6XCD
\$4795.00

3400C/240	16/3GB/12XCD/33.6	\$ 4795
3400C/200	16/2GB/12XCD/33.6	4199
3400C/200	16/2GB/6XCD/33.6	3939
3400C/180	16/1.3GB/6XCD/33.6	3695
2400C/180	16/1.3GB/Floppy/OS8	3249
1400C/166	16/1GB/6XCD	3225
1400C/133	16/1GB/6XCD	2359
1400CS/133	16/1.3GB/8XCD	2325
5300/100	8/500M8	1399

STARMAX SERIES



Star Max
5000/300-G
32/4.3GB/16XCD
\$3025.00

3000/240 MT-6S	32MB/2.5GB/8XCD/L2	\$ 2125
3000/240 MT-6E	32MB/2.5GB/16XCD/L2	2275
4000/200 MT-6	32MB/2.5GB/8XCD/L2	2475
5000/275-E	32MB/4.3GB/16XCD/L2	2479
5500/200	64MB/4.3GB/16XCD/L2	2679
5000/300 MT	32MB/4.3GB/16XCD/L2	2589
5000/300 MT-G	32MB/4.3GB/16XCD/L2	3025
6000/233 Pro	32MB/2.0GB/24XCD/L2	3575
6000/266 Pro	32MB/2.0GB/24XCD/L2	4175

SUPERMAC SERIES



Super Mac
900/250
32/2GB/8XCD/KEY
\$3439.00

C500/180	16/1.2GB/8XCD/KEY/28.8	\$ 1049
C800/200	16/2.1GB/8XCD/KEY/28.8	1249
C600/240	16/2.1GB/8XCD/KEY/28.8	1439
J700/150	16/2GB/6.7XCD/KEY/VCard	1749
J700/180	24/2GB/6.7XCD/KEY/VCard	1699
S900/250	Dual Proc. 32/4GB/12XCD	6325
S900/250	32/2GB/8XCD/KEY/VCard	3439
S900/233	32/2GB/8XCD/KEY/VCard	2725
S900/200	32/2GB/8XCD/KEY/VCard	2375
S900/180	32/2GB/8.0CD/KEY/VCard	2099



Apple
Multiscan 1710 17"
\$739.00

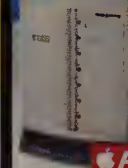
Apple	Multiscan 15" AV	\$ 399
Apple	Multiscan 1705	609
Apple	A-Vision 750 17"	829
Apple	A-Vision 750AV 17"	929
Apple	A-Vision 850AV 20"	1825
Hitachi	Superscan MC20	1325
Iiyama	VisionMaster Pro 21	1469
La Cie	Electron 21"	1539
Mitsubishi	Diamond Pro 91txm	1429
NEC	Multisync M700	740
Radius	Pressview 21SR	3069
Sony	Multiscan 200SF	719
Viewsonic	Optique V775	599



Epson
Stylus Color 800
\$412.00

Apple	Stylewriter 4100	\$ 239
Apple	Stylewriter 4500	339
Apple	LaserWriter 4/600	699
Apple	LaserWriter 12/640	1489
Epson	Stylus Color 600 1440dpi	285
Epson	Stylus Color 800 1440dpi	412
GCC	Elite XL 608 600 OPI	2259
GCC	Elite XL 808 800 OPI	2839
GCC	Elite XL 1208 1200 OPI	5619
HP	LaserJet 6MP	879
HP	LaserJet 4MV	2525
HP	Color LaserJet 5M	4685
NEC	SuperScript 1260N	CALL

SERVERS



Work Group
7350/180
48/4GB/12XCD/AS
\$3159.00

WORKGROUP SERVERS		
7350/180	48/4GB/12XCD	\$ 2449
7350/180	48/4GB/12XCD/AShare	3159
9650/233	48/4GB/FW/Internet	5295
9650/233	48/4GB/FW/DAT	5659
9650/233	64/4GB/FW/DAT/AShare	6295
NETWORK SERVERS		
500/132	32/1GB/CD	\$ 6725
700/150	48/4GB/CD/DAT/UNIX	9248
700/150	32/1GB/CD/UNIX	7365

REMOVEABLE HARD DRIVES

Iomega	Zip 100MB & Cartridge Ext.	\$ 149
Iomega	Zip 100MB & Cartridge Int.	166
Iomega	Jaz 1GB Retail & Cart. Int.	299
Iomega	Jaz 1GB Generic & Cart. Ext.	359
Iomega	Jaz 1GB Retail & Cart. Ext.	389
Iomega	Jaz 1GB Retail & 4 Cart. Ext.	599
Syquest	EZ 230 MB & Cartridge	189
Syquest	Syjet 1.5GB & Cartridge Int.	389
Syquest	Syjet 1.5GB & Cartridge Ext.	459
Syquest	Syjet 1.5GB & Cart. House Ext.	449
Fujitsu	640 MB Dynamo Int.	479
Fujitsu	640 MB Dyna. House Ext.	559
Fujitsu	640 MB Dynamo Ext.	599
Olympus	230 MB PowerMo Ext.	348
Olympus	2.6 GB PowerMo Ext.	1249
Pinn. Micro	4.6 GB Apex Ext.	1499
VST	230MB Opt. Dr. PB 3400	439
VST	230MB Opt. Dr. PB 1400	435

SCANNERS



La Cie SilverScan Pro Office
\$389.00

AGFA	Arcus II Bundle	\$ 1499
AGFA	StudioStar FV Photoshop	819
AGFA	SnapScan 300 LE Omnipage	289
Epson	Express. 636 Artist	900
Epson	Express. 636 Executive	735
Epson	Express. 636 Profess.	1249
H.P.	5P Mac 600 dpi LE Photo	449
Le Cie	SilverScan Pro Office	389
Linotype	Linocolor Jade 600 dpi	499
Microtek	Scanmaker E3	199
Microtek	Scanmaker III w/Photo	1825
Umax	Astra 600S 300 dpi	224
Umax	Astra 1200S 600 dpi	435
Umax	Powerlook II & Trans	1259

PERIPHERALS

CACHE CARDS		
256K	Performa 6400 Series	\$ 110
256K	L2 Dimm, 7200-8500 Series	39
512K	L2 Dimm, 7200-9500 Series	120
REMOVABLE CARTRIDGES		
Syquest	200MB or 270MB	\$ 25
Syquest EZ	135MB / 230MB	19/25
Iomega	Zip 100MB/JAZ 1GB	16/83
Nomai	200MB	25
Video Cards		
ATI	ExclaimVR 2mb V-card	\$ 175
ATI	ExclaimVR 4mb V-card	249
IMS	Twin Turbo 4mb V-card	389
IMS	Twin Turbo 8mb V-card	549
Number 9	Imagine 128 4mb V-card	389
Number 9	Imagine 128 8mb V-card	725
TrueVision	Targa 2000 Pro	3289

EXPANSION CARDS/CAMERAS

DOS CARDS		
Apple	Pentium 166mhz	\$ 929
Apple	Pentium 100mhz	849
Apple	586 100mhz	575
ETHERNET CARDS		
Farallon	Ethermac PCI 10BT w/RJ45 Cable	\$ 82
Farallon	Ethermac PCI 10BT w/BNC-T Cable	85
PROCESSOR UPGRADE CARD		
Newer Tech.	Max Power 604/400 Mhz	\$ 1719
DIGITAL CAMERAS		
Casio	GV 300 640 X 480 4MB's	\$ 649
Epson	Photo PC Mac Version	349
Epson	500 w/Flash Mac Digital Camera	489
Kodak	DC 120 Digital Camera	899
Olympus	O200L Digital Camera	549
Sony	DSC-F1 w/Flash 4mb Color LCD	679

HARD DRIVES

Quantum Stratus 4.3 GB		
\$399.00		
ORIVE	INT.	EXT.
Quantum Fireball TM 2.1 GB	\$ 239	\$ 289
Quantum Fireball TM 3.2 GB	299	359
Quantum Stratus 2.1 GB	279	339
Quantum Stratus 3.2 GB	329	389
Quantum Stratus 4.3 GB	399	459
Quantum Stratus 6.4 GB	499	559
Seagate Barracuda 2.1 GB N	539	599
IBM Ultrastar II 4.32 GB	559	619
Fujitsu Allegro 4.4 GB N	599	659
Quantum Atlas II 4.5 GB N	759	819
Quantum Atlas II 4.5 GB W	759	859
Seagate Barracuda 4.3 GB N	669	729
Seagate Barracuda 4.3 GB W	735	835
Quantum Atlas II 9.0 GB N	1179	1249
Quantum Atlas II 9.0 GB W	1179	1279
Seagate Barracuda 9.0 GB N	1128	1188
Seagate Barracuda 9.0 GB W	1198	1258
Seagate Elite 23.0 GB W	2725	2820

MEMORY

MEMORY SALE!		
4MB	72 Pin Simm	\$ 31
8MB	72 Pin Simm	46
16MB	72 Pin Simm	79
32MB	72 Pin Simm	129
8MB	Powerbook 1400 Module	87
16MB	Powerbook 1400 Module	127
24MB	Powerbook 1400 Module	155
8MB	Powerbook 3400C Module	87
16MB	Powerbook 3400C Module	155
32MB	Powerbook 3400C Module	189
64MB	Powerbook 3400C Module	459
128MB	Powerbook 3400C Module	939
BMB	168 Pin Dimm 60NS 5Volts	52
16MB	168 Pin Dimm 60NS 5Volts	74
32MB	168 Pin Dimm 60NS 5Volts	139
64MB	168 Pin Dimm 60NS 5Volts	249
16MB	168 Pin Dimm 60NS 3Volts	84
32MB	168 Pin Dimm 60NS 3Volts	154
64MB	168 Pin Dimm 60NS 3Volts	299
VRAM		
1MB	7200,7500,7600,8500 Series	\$ 39
2MB	ATI VRam Card-9500 Series	114
Motorola VRAM		
4MB	VRam Dimm	\$ 125

KEYBOARDS/MODEMS

KEYBOARDS		
Adesso	Tru-form w/Touchpad	\$ 89
Apple	Design Keyboard	69
Apple	Extended Keyboard II	119
Radius	Extended Keyboard	49
MODEMS		
Farallon	Netopia (ISDN)	\$ 329
Global Village	Teleport 33.6 Internet	139
Global Village	Teleport 56K V.34 14.4 Fax	179
Global Village	PowerPort 56K PC Card	269
Global Village	Platinum Pro PC Card	330
Supra	Express Modem 33.6	90
Supra	ExpressFax Modem 56E V.34	129
Supra	Express 56E Speakerphone	139
U.S. Robotics	33.6 PC Card Cellular/Ethernet	329
U.S. Robotics	Sportster 56K	189
Zoom	33.6 Int. 14.4 Fax PC Card	155
WE ISSUE CREDIT ON CPU TRADE-INS!		
3 Year Extended Warranty Available!		

LEASE SPECIAL

BankVest		
9600/350 MHz		
• 64MB RAM		
• 4GB HD, 24 X CD		
• Apple 850 Monitor		
• Keyboard		
36 Month Lease		
\$198.00		
Leasing Specialists		
FAST APPROVAL		
Lowest Rates • No Advance Payments		
Tax Deductible		
Business & Personal Leasing Available		
Ask For The Leasing Department		

2785 PACIFIC COAST HIGHWAY #178 TORRANCE, CA • 90505 PHONE: 310-533-0496 FAX: 310-533-0501
BUSINESS HOURS: MONDAY-FRIDAY 7:00 AM to 7:00 PM PST SATURDAY 10:00 AM to 2:00 PM PST

Due to publication time, the advertising prices may vary. All prices includes cash discounts. Not responsible for typographical errors. Shipping and service fees are nonrefundable. No sales tax outside of CA. All returns subject to 15% restocking charge. All returns must have an authorization number (R.M.A.) Graphics shown do not necessarily represent actual product.



**SONY, FWB
VIEWSONIC
NEC, NEWER TECH
RADIUS, AGFA
SOFTWARE TOO!**



**HP, IMS, ATI
MIRO, TARGA
EPSON, WACOM
TRUEVISION
MICROTEC**



CUSTOM CONFIGURATIONS

a division of BASEONE computers.

LEASING PLANS AVAILABLE

HONESTY AND INTEGRITY, NOT BAIT AND SWITCH. CALL FOR THE BEST PRICE!



POWERMAC

PERFORMA

POWERBOOK

UMAX

NEW STUFF!!! 9600/350 & 8600/300

Q605	4/160	359
Q610	4/500	395
4400/200	16/2GB/CD	1349
4400/200	SMALL BUSINESS	1629
4400/200	PC COMPATIBLE	2259
5400/180	16/2G/CD/15"□/ETH	1299
6500/225	32/3GB/CD	1639
6500/250	32/4GB/CD/ZIP	1799
6500/250	48/4GB/CD/ZIP/OFF	2099
6500/275	CREATIVE STUDIO	2489
6500/300	32/4GB/CD/ZIP	2489
7200/90	8/500/CD REF	699
7200/120	16/1.2GB/CD	1129
7300/180	16/2GB/CD	1849
7300/180	DOS 32M/16D/2GB	2859
7300/200	32/2GB/CD	2429
8500/120	16/1GB/CD REF	1399
8500/150	16/2GB/CD REF	1799
8600/200	32/2GB/CD/ZIP	2599
8600/250	32/4GB/24XCD/ZIP	3059
8600/300	32/4GB/24XCD/ZIP	3489
8600/300	32/4GB/24XCD	3389
9500/132	16/1GB/CD/VI REF	1899
9600/200	32/4GB/CD	2779
9600/200	MP 32/4GB/CD	3499
9600/233	32/4GB/CD	2995
9600/300	64/4GB/24XCD/ZIP	4295
9600/300	64/4GB/24XCD	4189
9600/350	64/4GB/24XCD/ZIP	4999
9600/350	64/4GB/24XCD	4889

5400/180	16/1.6GB/CD/15"	1249
5400/180	16/2GB/CD/15"/ETH	1299
6205 CD	8/1GB/CD REF	599
6218 CD	16/1GB/CD	699
6360/160	16/1.2GB/CD/REF	799
6360/160	16/1.2GB/CD	969
6400/180	16/1.6GB/CD REF	889
6400/180	16/1.6GB/CD	1099
6400/200	16/2.4GB/CD	1199
6400/200	VIDEO EDITION	1669

DUO 2300C	8/750 REF	979
DUO 2300C	8/750	1079
DUO 2300C	20/1GB/MOD REF	1399
DUO 2400C	16/1.3G	3299
DUO DOCK II PLUS		459
5300C/100	16/1GB REF	1399
5300CE/117	32/1G	STOCK
1400CS/117	12/1GB	1649
1400CS/117	20/1GB/CD	1899
1400CS/133	16/1.3GB/CD	2229
1400C/133	16/1GB/CD	2489
1400C/166	16/1GB/CD	3099
3400C/180	16/1.3GB	3229
3400C/180	16/1.3GB/6XCD	3499
3400C/180	16/1.3GB/12XCD	3829
3400C/200	16/2GB/6XCD	3799
3400C/200	16/2GB/12XCD	4149
3400C/240	16/3GB/12XCD	4999
ACTIONTEK	33.6 /28.8	149/129

C500LT/180	16/1.2GB/8XCD	939
C500/180	16/1.2GB/8XCD	1049
C500I/180	16/1.2G/8X/10BASET	1059
C600/180	16/1.2GB/8XCD/33.6	1049
C600/240	24/2.1GB/8XCD/33.6	1429
C600I/200	32/2G/12X/ZIP/10BT	1599
C600X/240	32/3G/12X/33.6/10BT	1895
C600X/280	32/4G/12X/33.6/10BT	2295
J700/180	24/2.1GB/CD/33.6	1685
S900/200	32/2.1GB/CD	2389
S900/233	32/2.1GB/CD	2745
S900/250	32/2.1GB/CD	3449
S900/DP	200/32/2.1G/CD/IMS	3129
S900/DP	250/64/4GB/CD/IMS	6199

FREE ASTRA 600 W/ANY C600 7/15 TO 9/30

PRINTERS

Apple COLOR 11X17	299
Apple STYLEWRITER 2200	259
Apple STYLEWRITER 2500	199
Apple STYLEWRITER 4100	249
Apple STYLEWRITER 4500	349
Apple STYLEWRITER 6500	479
Apple LW 12/640	1379
Apple LW 16/600 REF/NO TONR	1219
Apple LW 16/600	1769
NEW!! Apple LW 8500 20 (20PPM)	CALL
Apple LW COLOR 12/660	4859
EPSON STYLUS 600	299
EPSON STYLUS 800	429
EPSON STYLUS PRO XL	1359
HP 870CXI	379
HP 6MP	879
HP 5M	1499
HP 4MV	2229
QMS & GCC PRINTERS	STOCK

STORAGE

APPLE	2GB HD 3.5 SCSI	229
APPLE	4GB HD 3.5 SCSI	449
EZ QUEST	JAZ EXT. W/CART	359
EZ QUEST	JAZ INT. W/CART	329
EZ QUEST	JAZ & Y4X6 CDR	1029
FWB	PCI JACKHAMMER	375
IOMEGA	JAZ DRIVE	379
IOMEGA	ZIP DRIVE	149
IOMEGA	ZIP DR. INT.	109
IOMEGA	ZIP CART	14
IOMEGA	JAZ CART	89
IOMEGA	SCSI TO PC CONNECTOR	19
QUANTUM	2.1GB HD 3.5 SCSI	269
QUANTUM	4.3GB HD 3.5 SCSI	419
QUANTUM	6GB HD 3.5 SCSI	499
QUANTUM	9.1GB ATLAS II	1099
SEAGATE	4.5GB CHEETAH	865
SEAGATE	9.1GB CHEETAH	1799
SEAGATE	2.5GB BARRACUDA	469
SEAGATE	4.5GB BARRACUDA	819
SEAGATE	9.1GB BARRACUDA	1299
SEAGATE	23GB ELITE	2749
EXT. HD	CASE	59

MOTOROLA

3000/200	32/2.5GB/CD/28.8	1699
3000/200E	32/2.5GB/CD/ZIP	1969
3000/240E	32/2.5GB/CD/ZIP	2359
3000/240S	32/2.5GB/CD	2199
4000/200E	32/4.3GB/CD/ZIP	2599
5000/225	32/2.5GB/16XCD/3D	1899
5000/225E	32/2.5GB/16X/10BT	1899
5000/250	32/2.5/16X/ZIP/MDM	2199
5000/275E	32/4.3/16X/ZIP/10BT	2599
5000/300	32/4.3GB/CD/ZIP	2599
5000/300	32/4.3GB/CD/ZIP/8M	2999
5500/200	64/4.3/16X/ZIP/100BT	2799
6000/233	32/2G/24XCD/512K	3649
6000/266	32/2G/24XCD/512K	4199

WORKGROUP SERVER

CALL ABOUT OUR HUBS, & ETHERNET

7250/120	16/1.2GB/CD/WEB	1599
7350/180	48/4GB/CD	2599
7350/180	48/4GB/CD/WEB	2959
7350/180	48/4GB/CD/A.S.	3059
8550/200	32/2GB/CD/A.S.	CALL
9650/233	64/4GB/CD/WEB	4999
9650/233	64/2X4GB/CD	4999
9650/233	64/2X4GB/CD/A.S.	5959
9650/350	16/2X4GB UW/24X	CALL
9650/350	16/2X4GB UW/CD/ASCALL	CALL
9650/350	16/2X4 UW/CD/INT	CALL
700/200	48/2X4GB/CD	10995

MONITORS

Apple 15"	359
Apple 15"AV NEW/REF	379/329
Apple 1705 17"	559
Apple 1710 17"	759
Apple 1710AV 17"	849
AppleVision 750	849
AppleVision 750AV	949
Apple 850 20"	1479
Apple 850AV 20"	1799
NEC C400/C500/M700	279/349/759
NEC P1150 20"	1689
Sony 100SF	349
Sony 200SF	749
Sony 300SFT	1399
VIEWSONIC 17PS	739
VIEWSONIC GT800	1189
VIEWSONIC P810	1399
VIEWSONIC PT770	739
VIEWSONIC G810	1195

VIDEO CARDS

ATI XCLAIM 2 MB	219
ATI XCLAIM 4 MB	309
ATI TV TUNER	99
ATI XCLAIM 3D 8 MB	329
IMS TWIN TURBO 8 MB	449
IMS TWIN TURBO 4 MB	249
IMS TWIN TURBO 2 MB	199

We carry the full line of 3D & Photoshop Accelerated Graphics Cards by Radius.

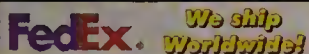
SCANNERS

AGFA SNAP SCAN 3D	295
AGFA STUDIO SCAN II SI	629
AGFA STUDIOSTAR	739
AGFA ARCUS II	1599
APPLE ONE SCANNER 1200/30	799
EPSON 636/EXEC	749
EPSON 636/PRO	1329
LINOTYPE SCANNERS	STOCK
Microtek ScanMaker E3	299
Microtek ScanMaker E6 Pro	829
Microtek ScanMaker III	1399
NIKON COOLSCAN 20i	1089
NIKON SUPERCOOL SCAN	1629
U-MAX Astra 600-LE	275
U-MAX Astra 1200-LE	445
U-MAX Astra 1200-PRO	599

800-951-1230

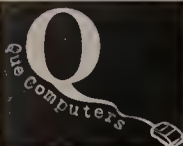
www.machbase.com

Int'l (714) 428-0777 University, School, Government & Fortune 1000 P.O.'s Accepted! FAX (714) 428-0778



Dealers inquiries welcome. Returns subject to restocking fee. Prices reflect C.O.D. or CASH and are subject to change without notice. P.O.'s subject to approval.





RAM Specials

1MB/2MB/4MB 30pin
\$3.95/\$9.95/\$19.95
8/16/32MB 72pin
\$29/49/119, new 60ns

Mac & Peripherals

SE/30 8/40	\$175	Mac IIsi 5/40	\$125
Mac IICx 8/80	\$139	Mac IICi 8/80	\$165
Mac IICi 8/200	\$199	Mac IICx 8/80	\$149
Mac IIfx 4/80	\$175	IIfx 16/230	\$299
StyleWriter 1500 new	\$149	Ext kbd II	\$29
AppleLaserWriter IIInt/ntx/f	\$199/\$249/\$299		
13"/14"/16" Mac Trinitron	\$150/\$175/\$299		

Power supply:
Plus \$35, SE \$35, LCs \$25 All Mac II \$25

Logic board:
SE /HDFD \$49, SE/30 \$75, II w/HDFD \$39
IICx/si/cx \$49, IICi \$75, IIfx \$99

Package Deal:
IIsi 5/80 13" RGB, ext. kbd, mouse \$275
IICx 8/80 13" RGB, ext. kbd, mouse \$275
IICi 8/80 13" RGB, ext. kbd, mouse \$299
IICi 8/200 13" RGB, ext. kbd, mouse \$350

Que Computers 612-623-0903
Mac/PC, New/Used, Buy, Sell, Upgrade
90-day warranty on all pre-owned equipment
fax 612-623-9155 No extra charge on credit card order

CIRCLE 412 ON READER SERVICE CARD

Apple II & Macintosh

COMPUTERS • PARTS EXCHANGE REPAIRS

Specialists in used & reconditioned systems, monitors, printers & parts.
Call for a free catalog.

WE BUY MACS!

Offices: 617-778-4600 Fax: 617-778-4848

1-800-274-5343

Pre-Owned Electronics

125 MIDDLESEX TPKE, BEDFORD, MA 01730

CIRCLE 403 ON READER SERVICE CARD

RECONDITIONED MACS & PERIPHERALS FROM DATATECH

COMPUTERS

LC III 8/160	\$199
Centris 610 8/230	\$299
Quadra 650 8/230	\$449
Quadra 800 8/500	\$499
Quadra 840av 16/500/CD	\$599
PM 7100/80 8/230/CD	\$699
PM 8100/80 16/500/CD	\$799
PM 8100/100av 16/1G/CD	\$999

MONITORS

14" Apple Trinitron	\$199
15" Apple Multiscan	\$249
16" Apple Color	\$299
17" Apple Multiscan	\$399

6-Month Warranty On All Items

To order, call toll-free between 10am and 5pm CST:

1-800-281-3661

Fax-On-Demand: 615-860-0109

E-mail: DataTecRem@aol.com

Web: www.datatech-rmkt.com

DataTech

REMARKETING, INC.

471 Myatt Dr., Madison, TN 37115

CIRCLE 407 ON READER SERVICE CARD

MacGlobal

SYSTEMS AND PERIPHERALS • SALES AND SERVICE

Performas

410/466/476 Call
550 5/160 \$700
580 5/500/CD \$800
631 8/500/CD \$550
6200 8/1G/CD \$675
5200 8/500/CD \$995

PowerBooks

520 4/160 \$850
520C 12/240/19.2 \$1195
540C 4/320 \$1,395
5300 8/500 \$995
Quadrax
630 8/250 Call
650/800/840/950 Call

Power Macs

7200 8/500 Call
7500 16/500 Call
8500 16/500 Call

Memory

4 MB 72-pin \$29
8 MB 72-pin \$42
16 MB 72-pin \$89

Printers

Stylw II \$185.00
Stylw 1200 \$175
Laser 300 \$299
Laser 320 \$490
Laser 4/600 Call

Monitors

14" Color \$195
15" App. Multi. \$265
17" App. Multi. \$450
20" GS \$540



**WE REPAIR
MACS!**

TOP DOLLAR paid for
memory, PowerBooks
and CPUs!

[800] 722-8864

Phone: [408] 268-3300

Fax: [408] 997-1400



CIRCLE 479 ON READER SERVICE CARD

800-345-1234

DATA

www.datamicro.com

Sales: (310)-398-3300

Fax: (310)-391-2488

e-mail: datamicro@earthlink.com

Dealers & International Sales Welcome

Micro Computer Inc.
3847 Grandview Blvd
Los Angeles, CA 90008

PowerMacs

Sale	Lease
6100/66 8/500/CD	\$649 18
6100/DOS 16/500/CD	\$849 23
4400/200 16/2GB/CD	\$1349 37
7200/120 16/1GB/CD	\$1095 30
7300/180 16/2GB/CD	\$1749 48
7300/200 32/2GB/CD	\$2175 58
7600/132 16/1GB/CD	\$1495 41
8500 & 9500 Series	CALL
8600/200 32/2GB/CD	\$2549 71
9600/MP 32/4GB/CD	\$3550 99
9600/233 32/4GB/CD	\$3045 96
9600/300 64/4GB/CD	\$4395 123
9600/350 64/4GB/CD/Zip	\$5195 143

PowerBooks

1400cs/117 12/750	\$1499
1400cs/117 16/750/CD	\$1749
1400c/117 16/1GB/CD	\$2295
1400c/133 16/1GB/CD	\$2395
2300c 8/750	\$1099
2300c 20/1GB/Modem	\$1399
2400c/180 16/2GB	CALL
3400c/180 16/1GB/CD	\$3349
3400c/200 16/2GB/CD	\$3749
3400c/240 16/3GB/CD	\$4749

Performas

6116 8/700/CD	\$695
6116/DOS 16/700/CD	\$895
5200 8/500/CD/15"	\$795
6200 8/1GB/CD	\$649
6360 16/1GB/CD	\$895
6400/180 16/1GB/CD	\$969
6400/200 32/2.4GB/CD	\$1095

Monitors

Apple MultiScan 14"	\$229
MultiScan 15"	\$299
1705 (17")	\$599
MultiScan 20"	\$1475
radius 15" Grayscale	\$199
Pivot 15" Grayscale	\$295
20" Grayscale	\$695
17" Color	\$645
IntelliColor 20"	\$1099
Precision 21" Color	\$1495

Printers

Apple LaserWriter 16/600	\$1995
LaserWriter 12/660	\$3999
LaserWriter 12/640	\$1399
LaserWriter 360	\$1249
StyleWriters	Lowest Price.
hp HEWLETT PACKARD LJ. 5SIMX	\$3495
LaserJet 5M	\$1495

Scanners

Agfa Arcus II	\$1475
Agfa Studio Star LE	\$689
UMAX PowerLook II	\$1249
EPSON Stylus 3000	\$1649

Call for Software & Accessories not listed

MOTOROLA StarMax

4000/200 32/2.5GB/CD	\$2245
5000/275 32/4.3GB/CD	\$2395
5000/300 32/4.3GB/CD	\$2475
5500/200 32/4.3GB/CD	\$2750
6000Pro/266 32/4.3GB/CD/Zip	\$4249

UMAX SuperMac

500/600/700 Series	CALL
S900/200 32/2GB/CD/MP	\$2995
S900/225 32/2GB/CD	\$2595
S900/233 32/2GB/CD	\$2695
S900/250 32/2GB/CD/Zip	\$3359

DIGITAL

Media 100gx	\$2195
Bravada 1000	\$629
Targa 1000PCI	\$1789
Targa 2000PCI	\$2698
IX Micro Twin Turbo SMB	\$595
Kodak DC 25	\$459
Kodak DC 50	\$859
Apex 4.6 Optical Drive	\$1685
Raid Array Hard Disks	CALL

We Specialize In Business Leasing

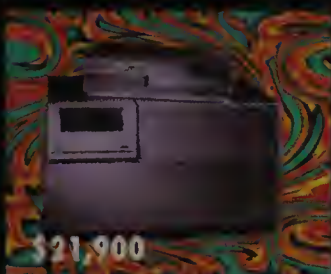
Government, Universities & Corporations R.O.s are accepted

Visa MasterCard

CIRCLE 464 ON READER SERVICE CARD

MAC CARE, Specializing in Rebuilt Imagesetters complete PrePress Systems and Digital Video

PrePress System for Process Color



COMPLETECOLOR PREPRESS SYSTEM FOR PROCESS COLOR

INCLUDES: POWERMAC 4400 200 MHZ w/ 36M RAM, 17" COLOR MONITOR, AGFA ARCUS II SCANNER w/PHOTOSHOP, COLOR PROOF PRINTER, AGFA 9550 COLOR IMAGE-SETTER, LEVEL II RIP AND PROCESSOR

\$21,900

AGFA • Linotype • ECRM • Ulte • Scitex

SilkScreening System

Imagesetter - Agfa or LinoType 18" Wide

- Includes RIP
- Adobe Postscript
- 2400 DPI
- Factory Refurbished
- Call for New & Refurbs!!

\$15,000

Spot Color System

COMPLETE SYSTEM FOR SPOT COLOR

Includes Power Mac 7500 24/16, 17" Color Monitor, Software, Ex Keybd., AGFA Color Scanner, Color Proof Printer, Imagesetter w/Rip & Processor.

\$16,950

Proofing Printers

FARGO • EPSON • 3M
RAINBOW • QMS
OTHERS
STARTING AT \$1250

Scanners

DRUM • FLATBED
ALL MODELS
NEW & REBUILT

Software

Adobe After Effects Pro \$1595
Electric Image Broadcast \$1595
Adobe Photoshop \$495
Ulimotte \$1475
Meta Tools Studio/Final Effects . 650/650
DG Effects/Durorix \$279/279

Adobe Effects Bundle



PM 8500/120/32MB/2GB/4XCD
Adobe Premier 4.2, Adobe After Effects v3.0 Apple
17" Color Monitor, Apple Extended Keyboard, Borris
Effects. Reflects Cash Price



Media 100qx

7600/132 - 32M/1G/CD
Adobe Premier 4.2, 17"
Monitor, Keyboard, 4100
w/SCSI Wide

\$5,875

LEASING

SBA • LEASING • LOANS

ON ANY TYPE OF BUSINESS OR EQUIPMENT
EVEN OUR COMPETITION WE WILL LEASE!

NATIONAL & INTERNATIONAL

CIRCLE 405 ON READER SERVICE CARD

AVID® MCXPRESS MAC

AVID® MCXPRESS Workstation for Macintosh
SYSTEM INCLUDES: Real Time
effects, country kit 110v, betacam
video, ovid standards effects, Dual
Channel Controller, 2 Channel
Audio, Film Option, Deck Control,
& 3D. Note: Options not included
Starting at 9,800



MicroSphere Station

PM 9500/200/128MB/3GB/CD/ATI



Targa 2000, Microsphere
v1.4, CG Option, 17" Color
Monitor, Ext. Keyboard, 18GB
Disk and much more! **Call !**

Media 100 LX

9500/200MHz 128MB/2G/CD

After Effects 3.0, 17" Monitor, Keyboard,
4100 w/SCSI Wide Array, Vicent Compane
Batch

Low \$14,900

800-429-7779

Tel: 714-574-3939
Fax: 714-574-3947

3101 W P.C.H
Newport Beach, 150
CA, 92663

Email: Clucero126@aol.com

PowerMacs

PM 4400/200 603e/16/2GB/8X/256k L2/KB \$1379
PM 6500/225/250/300 SYSTEMS \$CALL
PM 7300/180 604e/16/2GB/12X/12/KB \$1899
PM 7300/200 604e/32/2GB/12X/256k L2/KB \$2299
PM 8600/250 & 300 \$CALL
PM 9600/300 & 350 **New** \$CALL

Call for Best Prices for PowerTools StarMax Clones

SCSI Hard Drives

Quantum 2.1 Gb WITH 3 YEAR
9.5ms FireBall ST WARRANTY
Int. \$249 Ext. \$299
• FWB HD TOOL KIT INCLUDED • 30 DAY MONEY BACK
GUARANTEE • FULL MANUFACTURER WARRANTY

HardDrives
Include: SYSTEM 7.1 INSTALLED & 30MB OF FREE SOFTWARE
EXTERNAL VERSION FEATURES PLATINUM CASE WITH DUAL
SCSI PORTS, PUSH-BUTTON SCSI ID AND 40 WATT POWER

SCSI Hard Drives Int. Ext.
80Mb IBM 3.5" 14ms 90 Day Warranty \$49 \$99
2.1Gb Quantum Fireball ST 9.5ms 3yr. warr. \$249 \$299
3.2Gb Quantum Fireball ST 10.5ms 3yr. \$319 \$369
4.3Gb Quantum Fireball ST 9.5ms \$379 \$429
4.3Gb IBM UltraStar II 1/3 hgt. 8.5ms 3yr. \$399 \$449
6.4Gb Quantum Fireball ST 9.5ms \$499 \$549
9.1Gb Quantum Atlas II 0ms \$1099 \$1149
Call or visit our web site for full line of 2.5" & 3.5" IDE Hard Drives.

Removable Storage Solutions

Zip Drive 100mb with 1 Cartridge Int. Ext.
Zip Cartridges \$14 Each \$120 for 10 pk. \$189 \$149
Jaz Drive 1Gb with 1 Cartridge \$299 \$359
Jaz Cartridges \$85 Each \$790 for 10 pk.
Yamaha CR400T 4X Write/6X Read w/ Toast Pro \$609 \$659

Open: 9am-7pm M-F / 10am-4pm Sat. CST E-Mail Us at: owc@macsales.com

ther World Computing

SERVING THE MAC UNIVERSE SINCE 1988

800-275-4576

VISIT www.macsales.com FOR SPECIALS, PRODUCT INFO

Mac Memory

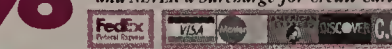
AND SECURE ONLINE ORDERING!

LifeTime Replacement Warranty
30 Day Money Back Guarantee

168 PIN DIMMS
2k Refresh
8 MEG 60 NS \$39
16 MEG 60 NS \$75
32 MEG 60 NS \$125
64 MEG 60 NS \$249
30 PIN SIMMS
Non-Parity for Older Macs
1 MEG 70 NS \$9.75
2 MEG 70 NS \$19
4 MEG 70 NS \$29
8 MEG 70 NS \$79
16 MEG 70 NS \$149
72 PIN SIMMS
2k Refresh Non-Parity
4 MEG 70 NS \$22
8 MEG 70 NS \$37
16 MEG 70 NS \$65
32 MEG 70 NS \$125
VIDEO RAM Upgrades
256k 7100/Quadra800/650 \$15
512k 8100/Quadra/LC's \$25
1MEG 72/75/76/8500 & Comp. \$35
2 MEG 9500/ATI Upgrade \$99

Atlantic Technology FOR A TRULY ASTONISHING MULTIMEDIA EXPERIENCE!
50 Watt M110 & M105 Speaker Set
3 Pc. Sub-Woof
Speaker System
FREE STANDS WHILE SUPPLIES LAST (retail: \$269)
• with any purchase. \$109 purchased alone

Competitive Prices, Quality Products
and NEVER a Surcharge for Credit Cards!



PowerBooks

1400/133&166 \$CALL
2400c/240 NEW! \$CALL
3400c/180 16/1.3 GB/6XCD/33.6 Mdm/Eth \$3799
3400c/200 16/2 GB/6XCD/33.6 Mdm/Eth \$4199
3400c/240 16/3 GB/12XCD/33.6 Mdm/Eth \$4999

PowerBook Memory

PowerBook 3400 Series Memory
16 MEG \$119
32 MEG \$209
64 MEG \$359
96 MEG \$799
128 MEG \$899

PowerBook 1400 Memory

8 MEG \$89 16 MEG \$139 24 MEG \$179

PowerBook Hard Drives

2.5" SCSI & IDE PBook Drives
810 Mb Toshiba 13ms SCSI 1 Year Warranty \$389
1GIG Apple Rom IBM 13ms SCSI 1 Year Warranty \$449
Toshiba PowerBook Harddrives 4200 RPM 12ms IDE:
1.4 GIG Toshiba \$219 1.7 GIG Toshiba \$239
2.1 GIG Toshiba \$299 3.1 GIG Toshiba \$469

Acceleration Products

OWC Booster 605 33mhz \$39.95
Quadra 605, Performa & LC 475/476/477
OWC Rocket 61/71/8100 Variable \$49.95
PowerMac 6100/Performa 611X/ All 7100's/All 8100's
OWC AfterBurner 604 168mhz \$29.95
PowerMac 7500's w/604, 76/85/9500's to up to 168mhz.
ALL OWC CLOCK ACCELERATORS FEATURE EASY CLIP-ON INSTALLATION
AND REQUIRE NO SOLDERING OR OTHER MODIFICATION.

FOR MAC ACCELERATION INFO.

www.fastermacs.com

L2 CACHE With LifeTime Warranty

Motorola 256k L2 CACHE \$15
for 6100/7100/Performa 61xx Series & AV's
256k L2 & ROCKET COMBO \$59
KIT NEARLY DOUBLES PMac 61/71/Perf. 61xx PERFORMANCE

L2 PCI DIMM CACHE for 72/73/75/76/85/
8600 & Comp. IDT 256k \$59 512k \$79
PowerLogix RapidCache RC02 1024K \$159

High Performance L2 Cache for
4400/5400/5500/6360/6400/6500/PowerBase/StarMax
& StarMax Clones 256K \$45 512K \$89

PROCESSOR DAUGHTERCARDS
For PMac 73/75/76/85/86/95/9600 & PowerComputing
PowerCenter, PowerCurve, & PowerBase & Umax S900 & J700
Mhz: 604/132 150 604e/166 180 200 233
Apple \$59
PowerComputing \$99
PowerLogix \$249 \$299 \$849
Techworks \$349 \$549 \$899

Other World Computing

224 West Judd St., Woodstock, IL 60098
International: (815) 338-8685
Fax: (815) 338-4332

CIRCLE 553 ON READER SERVICE CARD

800-689-3933

Service (310) 479-0999
Fax (310) 312-9041

L.A. computer center

Macintosh PowerMac's

9600/350 64/4G/24x/CD/Zip	4899
9600/300 64/4G/24x/CD/Zip	3799
9600/233 32/4G/12x/CD	2795
9600/200 32/4G/12x/CD	2595
9600/200MP 32/4G/12x/CD	2999
9500/150* 16/2G/4x/CD	1999
8600/300 64/4G/24x/CD/Zip	3199
8600/200 32/2G/CD	2399
8600/200 64/4G/CD	2749
8500/180* 32/2G/8x/CD	2099
8500/150* 16/2G/CD	1699
7600/132* 16/1.2G/CD	1399
7300/200 32/2G/CD/K8RD	2199
7300/180 16/2G/8x/CD/K8RD	1695
7300/180 32/2G/8x/CD/DOS Compatible P166	2599
7200/120* 16/1.2G/4x/CD/DOS	1499
7200/120* 16/1.2G/CD	1099
7200/90* 8/500/4x/CD	749
6100/66* 8/500/4x/CD/DOS	849
4400/200 16/1.2G/8x/CD/K8	1199
4400/200 16/2G/12x/MS Office	1599
6500/225 32/3G/12x/Home	1649
6500/250 32/4G/12x/Zip Drive	1779
6500/250 48/4G/12x/MS Office	1999
6500/275 32/4G/CD/MDM	2399
6500/300 64/4G/CD/Zip	2399

Macintosh Performas

6360/120* 16/1.2G/CD	799
6400/200* 16/2.4G/8CD/VE	1399
6400/200 16/2.4G/8x/CD	999*/1199
6400/180 16/1.6G/8x/CD	899*/1099
640/33DD* 12/500/CD/DOS	599
6320/120* 16/1.2G/4x/CD/TV	749
6320/120 16/1.2G/4x/CD/TV	999
6220/75* 16/1.2G/4x/CD	669
6200/75* 8/1.2G/4x/CD	569
5400/120* 16/1.6G/8x/CD/15" built in	1199
5200/75* 8/800/CD	899
LC580 8/800	699

Macintosh PowerBook

C: Active Color, CS: Passive Color	
2300c* 100MHz, 8/750	999
2300c* 100MHz, 20/1GB/14.4	1299
1400cs 117MHz 12/750	CALL
1400cs 117MHz 16/150/6x Cd	CALL
1400cs 133MHz 16/1.3G/8x	1999
1400c 133MHz 16/1G/CD	2399
1400c 166MHz 16/2G/CD	2699
3400c 180MHz 16/1.3G/	2995
3400c 180MHz 16/1.3G/6x	3195
3400c 180MHz 16/1.3G/12x	3395
3400c 200MHz 16/2G/6x	3395
3400c 200MHz 16/2G/12x	3595
3400c 240MHz 16/3G/12x	4499
5300c 32/1G	CALL
5300c 16/750	CALL
5300cs 8/750	1069
5300c 8/500	CALL
5300cs/100* 16/750/14.4 Modem	1199
540c 4/320 Used	999
520c 4/240	CALL
520 4/240	CALL
DUO250* 12/200/Modem	799
DUO280* 12/240/Modem	999
DUO280C* 12/240	799

Macintosh Workgroup Servers

9650/233 64/4G/12x/Apple Share	5999
9650/233 48/4G/12x/Internet Ready	4999
9650/233 48/4G/12x/2GB Dat Drv.	5499
8550/200 32/2G/CD/Apple Share	4199
8550/200 32/2G/CD/Apple Share/Dat	4999
7350/180 48/4G/12x/Apple Share	3099
7350/180 48/4G/12x/Internet Ready	2899
7350/180 48/4G/12x	2449
7350/180 16/1.2G/CD/Networking	1299

PowerComputing

PowerTower Pro 275 (G3) 64/2G AV/24x/8MVR/1MB Cache	4699
PowerTower Pro 250 (G3) 64/2G AV/24x/8MVR/1MB Cache	4199
PowerTower Pro 225 Core 16/2G/24x/2MVR/1MB Cache	2549

MOTOROLA

StarMax 5000/225-S 32/2.5G/16x/512K	1899
StarMax 5000/250-S 32/2.5G/16x/512K	2249
StarMax 5000/275-E 32/4.3G/16x/512K/10BT	2599
StarMax 5500/200 64/4.3G/16x/512K/10/100BT	2799
StarMax 6000/233 32/2G/24x/512K/10BT	3699
StarMax 6000/266 32/2G/24x/512K/10BT	4299

UMAX

S900/DP 250MHz 64/4G RAID/8x/8MVR/Zip/100BT	6099
S900/233MHz 32/2G/8x/8MVR	2699
S900/250MHz 32/2G/8x/8MVR/Zip/100BT	3349
S900/200MHz 32/2G/8x/4MVR	2349
J700/180MHz 24/2G/8x/2MVR/Enel 33.6	1679
C500L/180MHz 16/1.2G/8x/1MVR	979
C600/240MHz 24/2G/8x/36.6	1399
C600/280MHz 32/4G/12x/2MVR/100BT/33.6	2199

Scanners

Agfa Arcus II	879
Agfa StudioStar w/ Full Photoshop	879
Agfa StudioScan IISI w/LE Photo	599
Agfa SnapScan 300	299
Umax Astra 600S w/Photo Oix.	249
Umax Astra 1200S w/Photo Oix.	469
UmaxPower Look II w/ Photo Full	1299
Umax Powerlook 2000	3699
Umax Mirage w/Trans. Adapter	3699
Microtek Scanmaker V300	199
Microtek Scanmaker III Full Photo/Tra. Ada.	1399
Microtek Scanmaker E6Pro 30 Bit	549
Microtek Scanmaker E6 30 Bit	329
Microtek Scanmaker E3	199
Microtek Scanmaker 35T+	729
Nikon CoolScan LS-20i	749
Nikon CoolScan LS-20e	879
Nikon Scantouch AX-110	319
Nikon Scantouch AX-210	499
Nikon Scantouch AX-1200	749
Nikon Super CoolScan LS-1000	1699
Epson Expression 636 Pro	1349
Epson Expression 636 Artist	979
Epson Expression 636 Executive	779
Epson 1200C w/Scantastic	999

Monitors



Mc 620 17" 28dp Mac	539
Mc 6315 17" 22dp Mac	679
Mc 7515 19" 22dp Mac	1039
Mc 20" 28dp Mac	1199
Mc 801 21" 22dp Mac	1539
Mc 801HR 21" 22dp Mac	1749

SONY

Sony 100SF	389
Sony 100SX 15"	329
Sony 200SF	669
Sony 200SX 17"	599
Sony 300SF 20"	1299

Corporate Accounts Welcome
Business Leasing Available
Reseller Inquiries Welcome
Fortune 1000, University, School, & Government Purchase Orders Accepted

Monitors

Multisync M700 17" 25mm	679
Multisync E1100 21" 28mm	1349
Multisync P750 17" 25mm	799
Multisync C500 15" 28mm	299
Multisync M500 15" 25mm	349
Multisync P1150 21" 25mm	1499
Multisync XV17+ 17" 28mm	599

radius

Precision View 21"	1579
Presview 21" SR	2799
Presview 17" SR	1599
Thunder 30/1600	599
Thunder Power 30/1920	849
Thunder TX 1152	1049
Thunder 3D	1699

ViewSonic

15GS 15" 1280X1024 .27dp	369
15GA 15" 1024X768 w/spkrs .27dp	389
17EA 17" 1280X1024 w/spkrs .28dp	539
17GA 17" 1024X768 .27dp	599
17PS 17" 1600X1280 60Hz .25dp	689
G8DD 20" 1600X1280 .28dp	1099
P815	1499
PT810 20" 1600x1200 .30dp	1179
P810 21" 1600X1280 71Hz .25dp	1399
PT813 21" 1280X1024 .28dp 100Hz	1499

Apple MAGNAVOX

Magnavox 20"	899
Apple 14"	279
Apple 15"	299
Apple 15"av	369
Applevision 850	1399
Applevision 850AV	1699
Apple 1705 17"	599
Apple 1750 AV 17"	CALL
Apple 1750 17"	CALL
Apple Multiscan 20"	1099

We carry a Full line of Computer Products, Memory, Modems, Printers, Scanners, Monitors, accessories, CD ROM's, Software, Hard Drives, Name Brand Computer Desktops and Notebooks. For Prices on products not listed on this Ad, Please call our sales hot line.

GE 4 YEAR ON SITE WARRANTY!

ASK YOUR SALES REP REGARDING GE EXTENDED ON SITE WARRANTY					
\$100 to \$350	\$351 to \$700	\$701 to \$1200	\$1201 to \$2000	\$2001 to \$3000	\$4001 to \$5000
\$49.95	\$79.95	\$139.95	\$169.95	\$199.95	\$259.95



Now You See It.

2MB ATI Video Card	249
4MB ATI Video Card XClaim	349
4MB ATI Video Card VR	399
8MB ATI Video Card	499

IMS Video

2MB IMS Video Card	249
4MB IMS Video Card	349
8MB IMS Video Card	499

Fax Modems

Global Village Communication	
GV 56K Teleport	249
GV 56K PCMCIA	349
GV 56K Platinum Pro + Ethernet	399
GV 19.2 Mercury PB 500 Series	499
GV 14.4 Gold PCMCIA	799
GV 14.4 Gold Teleport External	849
Powerport Platinum 33.6	1099
Teleport 33.6 w/Voice	159

UsRobotics

Sportster 56K	199
Sportster 56K PCMCIA	259
Sportster 33.6K	159

Memory

16MB Oimm PPC	79
16MB Simm Performa/PC	79
16MB for PwrBook 1400/3400	129
24MB for PwrBook 1400	169
32MB Oimm PPC	149
32MB Simm Performa/PC	149
32MB for PwrBook 1400/3400	199
64MB Oimm PPC	269
64MB for PwrBook 3400	479
128MB Simm PPC	849

Newer Technology

MAXpowr 180MHz 604e	479
MAXpowr 200MHz 604e	599
MAXpowr 225MHz 604e	749
MAXpowr 360MHz 604e 180x2	949
MAXpowr 400MHz 604e 200x2	999
MAXpowr 450MHz 604e 225x2	1099
NUpowr 1400 183MHz 603ev 128KL2 Cache	599
NUpowr PB 500 183MHz 603ev 128KL2	799
VIEWpowr PB1400 16bit video card	249
SCSI Micro Dock	145
Ethernet Micro Dock	199
PC Card Video In/Capture	299



Demo APPLE CDLD R LASER WRITER

12/660 w/New Toner & Accs. 28MB/240MB HDD
\$3299

Iomega

Jaz Drive Internal SCSI	299
Jaz Drive External SCSI	369
Zip Drive Internal SCSI	149
Zip Drive External SCSI	149
3 Pack Jaz Cartridges	240
10 Pack Zip Cartridges	130
Single Cartridges for Jaz	89
Single Cartridge for Zip	13

Powerbook Hard Drives

Upgrade your Laptop to 2.1GB of harddisk space. Drives come with Installation Software & software bios upgrade. On notebooks that accept non-slim of 17.5mm or higher height drives you can upgrade to 3.36GB of harddisk space. This is excluding all 100 and 500 series Apple Powerbooks. FREE INSTALLATION W/PURCHASE OF ANY NOTEBOOK.

1.4GB Toshiba 1401MAV 12ms	229
2.1GB Toshiba 2103MAV 12ms	299
3 GB Toshiba 17.5mm 12ms	499

External Hard Drives

IBM Orion 2.1GB SCSI 3.5	329
IBM Capricorn 4.3GB Ultra SCSI 3.5	419
IBM Capricorn 4.3GB Ultra Wide SCSI 3.5	549
Quantum Strata 2.1GB SCSI 3.5	289
Quantum Tempest 3.2GB SCSI 3.5	379
Quantum Atlas II 4.5 Ultra SCSI AV 3.5	799
Quantum Atlas II 4.5 Ultra Wide SCSI AV 3.5	849
Quantum Atlas II 9.1 Ultra SCSI AV 3.5	1149
Quantum Atlas II 9.1 Ultra Wide SCSI AV 3.5	1249
Seagate ST32171N 2.1GB Ultra SCSI 3.5 AV	539
Seagate ST32171W 2.1GB Ultra SCSI Wide 3.5 AV	599
Seagate ST34371N 4.3GB Ultra SCSI 3.5 AV	849
Seagate ST34371W 4.3GB Ultra SCSI Wide 3.5 AV	949
Seagate ST19171N 9.1GB Ultra SCSI 3.5 AV	1099
Seagate ST19171W 9.1GB Ultra SCSI Wide 3.5 AV	1199

Software

Following Prices valid with purchase of a Computer. The following Software are full Versions.

Microsoft Office 97	299
Microsoft Word 97	199
Microsoft Excel 97	199
Microsoft Powerpoint 97	199
Macromedia Director	499
Microsoft Access 97	199
Adobe Photoshop 4.0	349
Adobe Pagemaker 6.5	349
Adobe Illustrator	299
Macromedia Freehand	299

Printers

HP DeskJet 340	299
HP DeskJet 670C/692C	199/299
HP DeskJet 820CXII/870CX	279/399
HP LaserJet 6LXI/6PXL	385/729
HP LaserJet 6MP/5M	829/1399
HP LaserJet 5/5N	949/1199
HP LaserJet 4V/4MV	1699/2399
HP LaserJet 53I/5MX	2299/3399
HP Color LaserJet 5/5M	3799/4799
HP OfficeJet 590/1150C Pro	599/939

EPSON Apple Printers

EPSON Stylus Color 600/800	289/439
EPSON Stylus Color 3000	1649
Apple Laser 360/12/640	899*/1399
Apple Laser 4/600	599
Apple Laser 16/600PS	1199*/1699
Apple Stylewriter 1500	139*/199
Apple Stylewriter 2200	279
Apple Stylewriter 2500	189*/229
Apple Stylewriter 4400	239
Apple Stylewriter 4500	339
Apple Stylewriter 6500	CALL

INTERNATIONAL ORDERS WELCOME Call for Quantity Pricing!
UNIVERSITY, SCHOOL, GOV'T & FORTUNE 1000 P.O.'S ACCEPTED!

Visit Us At Our Web Site <http://www.LACC.com>
24Hrs A Day -- On-Line Catalog & Ordering
E-Mail us at: lacc@lacc.com or Call us at (800) 689-3933

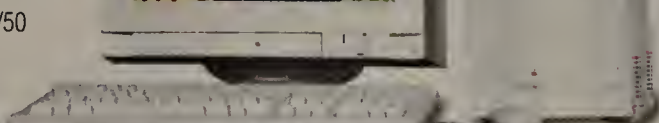
All prices subject to change without notice • All Prices reflect cash discount • * reflects Factory refurbished units

The Lowest Finance Rate Available FREE Software SuperBundle - \$3500 Value

Software SuperBundle - Adobe Premiere, Illustrator, PageMaker, Photoshop, LivePicture, Omni page Professional, DOS Mounter 95 Free with this Ultimate Graphics Workstation.

FULL-LINE AUTHORIZED SERVICE CENTER - MAC & PC
EQUIPMENT REPAIR, DATA RECOVERY, SHORT-TERM
RENTAL, LOANER PROGRAM AND POWERPC PROCESSOR
- 200/225/250/300 MHZ UPGRADE AVAILABLE.

SUPERBUNDLE!
\$399
PER MONTH



Power Macintosh 9600/350 Ultimate Graphics Workstation

- PowerPC 9600/350MHZ or PowerTower Pro 250MHZ MP
- Internal 16x CD-ROM
- 416 MB RAM
- 8.6GB internal RAID Disk
- Extended keyboard
- **\$1499** VisionMaster 21" Color - 1600X1200 0.22mm Color monitor
- Twin-Turbo -128bit Graphic Engine, 1600x1200, w/8MB Graphic Engine
- **\$1589** Agfa Arcus II w/ Trans, 36-bit

- **\$899** External combo drive combo w/Jaz drive, ZIP, SQ200MB w/Cart.
- **\$789** TI MicroLaser Pro 600dpi 12ppm, EtherTalk PostScript printer (15K pages toner life) w/one cartridge and Cables
- Active SCSI terminator, One 25/50 SCSI cable, five 50/50 cables
- **\$149** UPS Battery Back-Up
- Image Solutions Extended Services

WorkGroup & NetWork - Hub, 10BT

	Buy!	Lease!
PM 7250/120 16/1.2GB/CD	\$1089	\$53
PM 7350/200 32/2GB/CD	\$3379	\$69
PM 8550/200 32/2GB/CD/DAT	\$3989	\$93
PM 8550/200 32/2GB/CD/AS	\$3279	\$85
NWS500/132 32/2GB/CD/DAT	\$7979	\$199
NWS700/150 32/1GB/CD	\$7379	\$199
Novel -166 48/6GB/CD/DAT/Net	\$2989	\$69
5-Port / 8 Port 10BT Hub	\$49/\$69	Call
10BT PCI / Nubus Ethernet Card	\$49/\$99	CALL
10BT Cable 15'/25'/50'/100'	\$9/\$15/\$19/\$29	

PowerBook - 1400 CS/117 16/1GB \$1579

PowerBook - 1400C /133 16/1GB/CD	\$2479
PowerBook-3400C/240 15/3GB/CD/M/E/F	\$4979

System Bundle w/ 20" monitor, XKeyboard, Mouse

	Buy!	Lease!
PowTowPro/225 32/2.2GB/CD	\$3979	\$85
PM9600/233 32/4GB/12XCD	\$4399	\$99
PM9600/MP200 32/4GB/8XCD	\$4899	\$115
PM9500/MP 180 32/2GB/8XCD	\$3999	\$87
PM8600/200 32/2GB/12XCD	\$3849	\$83
PM7300/180 16/2GB/12XCD	\$2999	\$65
PM4400/200 16/1.2GB/8XCD	\$2499	\$55
StarMax 3000/160 16/1.2GB/8XCD	\$1979	\$52
SuperMac S900 /32/2.1GB/CD	\$3779	\$85
SuperMac C600 /16/1.2GB/CD	\$1989	\$55
DayStar MP400/ 2x200MHZ /32/2.2GB/CD		

Printer

EpsonStylus3000	\$1789
TI MicroLaserPro	\$789
HP 4MV 11x17	\$2389
GCC XL1208, 11x17	\$3869
Typhoon 8,36MB	\$2999

Monitor & Display Card

DSC 15"/17" Color	\$269/\$395
DSC 20"/21" Color	\$889/\$1239
ViewSonic 17"/20"	\$599/\$1129
Sony 17"/20" Color	\$639/\$1589
IMS 4MB/8MB Card	\$369/\$499

Jaz w/ Cart. \$299



\$199!



\$1189!



\$149!



\$469!



\$29!



Ext. H/D, DAT Tape, MO, SyQ & CDR Devices

(Minus \$39 for Internal Drive)

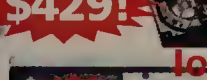
	Ext.	Turbo
42MB/160MB/230MB/540MB	\$89/\$129/\$149/\$199	+\$25
1GB/2GB/3.2GB/4.3GB	\$239/\$269/\$299/\$469	+\$25
7200rpm 2.2GB IBM/Quantum/Seagate	\$529/\$569/\$579	+\$25
7200rpm 4.3GB IBM/Quantum/Seagate	\$859/\$869/\$879	+\$29
Micropolis/Quantum/Fuji 9.0GB 7200rpm	\$1429	+\$49
SONY DAT Seagate/5000/7000	\$899/\$949/\$1149	+\$89
DLT Tape Drive 30GB/40GB	\$2749/\$4469	+\$99
ExtraByte 5GB Tape Dr.	\$1199	\$1249
SyQuest 270/200MB Ext. Drive	\$299/\$369	+\$25
SyQuest EZ135/EZ230	\$129/\$279	+\$25
Panasonic 650MB M.O. Dr.	\$699	\$749
SONY 1.3GB M.O. Drive	\$989	\$1099
Pinnacle Micro 4.6GB M.O.	\$1189	+\$99
Olympus 230MB/2.6GB M.O. Drive	\$309/\$1649	+\$99
Fujitsu 230/640 MB M.O. Drive	\$469/\$599	+\$49
Ricoh Rewritable CDR 6X/2X	\$589	\$649
SONY CDR 6X/2X w/Toast	\$399	\$429
Yamaha CDR 6X/4X w/Toast	\$689	\$729
Ext. Jaz/Zip & DiskArrays	Ext.	Turbo
IOmega Zip ext. Dr. w/Cart.	\$135	\$155
Jaz ext. Dr. w/Cart.	\$375	+\$25
Jaz + CDR ext. Dr w/SW	\$879	\$989
SyJet 1.5GB Dr. w/cart.	\$429	\$489
4GB DiskArray	\$889	\$999
8GB F&W DiskArray	\$1789	\$1989
16GB F&W DiskArray	\$3449	\$3599
24GB F&W DiskArray	\$6549	\$6699

Scanner

Epson 1000C/636	\$489/\$735	Sale
LinoColor JADE/SAPHIR	\$489/\$1789	
Microtek V300/E3/E6	\$145/\$185/\$289	
UMAX Astra 600 /1200	\$195/\$395*	Sale
UMAX PowerLook I/II	\$1189/\$1349	
Agfa StudioStar / Arcus II	\$735/\$1389	
Nikon CoolScan / Super	\$1149/\$1799	Sale

Quantum 4.3GB

Int. H/D



\$429!

Ricoh Re-Writable

Int. CD-R



\$589!

6X READ
2X WRITE

\$3.99!

MEMORY :VIKING, KINGSTON,
NEWER TECH. AVAILABLE

ORIGINAL SYQUEST CARTRIDGES

200MB	\$61!
44MB	\$41!
88MB	\$54!
176MB	\$54!

SyQuest

270MB	\$54
200MB	\$61/\$54
EZ 135	\$19/\$22
88MB	\$41/\$35
44MB	\$37/\$32

LOMEGA

1.0GB Jaz	\$83
100MB Zip	\$11*

lomega

1.0GB Jaz	\$83
100MB Zip	\$11*

74 Min.
650MB!

Optical

74Min CD	\$3.99
DSC 128MB	\$7.49
DSC 230MB	\$9.79
DSC 650MB	\$28.99
DSC 1.2GB	\$37.99

Memory

	30 pin	72 pin	168 pin
4MB	\$25	\$25	-
8MB	\$39	\$39	\$39
16MB	\$69	\$69	\$69
32MB	-	\$139	\$139
64MB	-	-	\$269

800-352-3420

Fax: 310-782-5974

Email: imagesol@earthlink.net

http://www.imagesolution.com

385 Van Ness Ave. #110 • Torrance, CA 90501



Order from 6 to 9 weekdays, weekends
from 9 to 9. Visit our showroom 9 to 6
weekdays, weekends by appointment.

Prices subject to change without notice. Not responsible for typographical
errors. 24 hour replacement limited to products in stock.



Image Solutions

The solution provider for print shops,
service bureaus and imaging professionals

MWAd#
1197CM

Sales

(818)787-1054

Same Day Shipping



CompuMall
Your Premier Computer Source



Fax

(818)787-2111

Prices Are Based on C.O.D. Order &
Subject to Prior Sales & Change!
* Factory refurbished with Warranty

800-977-5665

www.cmpumall.com e-mail:sales@cmpumall.com

New Faster MACS at Unbelievable Deals!

PowerMacs

8600/300

32-4GB 34xGB Zip

\$3495

9600/350

64-4GB 24xGB Zip

\$5345

9600/300	64-4GB, 24xGB, Zip	\$4395
9600/233	32-4GB, 12xGB	\$2999
9500/200	32-2GB, CD	\$2195
7300/200	32-2GB, 12xGB	\$2125
7300/180	16-2GB, 12xGB	\$1775
6500/300	32-4GB, 12xGB, Zip, 33.6	\$2345
6500/275	64-4GB, 12xGB, TV, Avid	\$2345
6500/250	48-4GB, 12xGB, Office, Zip	\$1995
6500/250	32-4GB, 12xGB, Zip, 33.6	\$1735
6500/225	32-3GB, 12xGB, 33.6	\$1595
4400/200	16-1.2GB, 8xGB	\$1195

Apple

PowerBooks

3400c/240 MHz

16/3GB, CD \$4095

3400c/200 MHz

16/2GB, CD \$3195

2400c/180 MHz

16/1.3GB, CD \$3095

1400c/166 MHz

16/2GB, CD \$2595

3400C Battery \$179

Performa

6400/200 16/2.4GB, 8xGB, 28.8 \$1095

6400/180 16/1.6GB, 8xGB, 28.8 \$895

6360/160 16/1.2GB, CD, KB., Modem \$835

6300/100 8/1GB, CD \$595

5400/180

\$1685

32/4.3GB 8xGB KB 15" Display

5400/180

\$1195

16/1.6GB 3xGB KB 15" Display CD Bundle



Fax/Modem

Teleport 33.6 \$7

Powerport 14.4 \$5

56K Flex PCMCIA \$25

US Robotics Ext. 56KX2 \$179

3400c/240	48-3GB, CD, 10BT, 56K	\$4695
3400c/200	48-2GB, CD, 10BT, 56K	\$3695
3400c/180	16-1.3GB	\$2995

1400cs/117	20-750, 8xGB	\$1895
1400cs/117	44-2.1GB, 8xGB	\$2395
6x/8x/12XCD	F-PB.	\$175/210/250

DUO 2300C	40-2.1GB	\$1495
DUO 2300C*	8-750	\$995
Floppy+Adpt. / Scsi Adpt.		\$275/199

Displays

APPLE

14" /15" AV	\$349/375
1705/1710	\$575/775
1710AV	\$895
17" 750/750AV	\$625/895
20" 850/850AV	\$1495/1795
20" 20" Trinitron	\$1395



radius PrecisionLine 21" 0.25dpi \$1395
PrecisionView 1710 0.25dpi \$1349

NEC

Best Buy
17XV+ 17"
W/ Speakers

\$645

SONY

ViewSonic

0.27dpi W/Sound

15" 0.25 dpi	\$395	15" 0.25" 15"	\$375
200SF 17" 0.25 dpi	\$685	17GA 17"	\$589
300SF 20" 0.25 dpi	\$1495	G800 21"	\$1165

Digital Cameras

Apple QuickTake 200	\$575
Agfa ePhoto 307	\$269
Agfa ActionCam	\$5649
CASIO QV-11	\$249
CASIO QV-300	\$679
Connectix QuickCam Clr.	\$189
EPSON PhotoPC500	\$459
Kodak DC20	\$179
Kodak DC25	\$379
Kodak DC50	\$639
Kodak DC120	\$929
RICOH RDC-2E	\$559

Video Cards

Turbo TV	\$89
Twin Turbo 128M4P	\$229
Twin Turbo 128M8	\$449

Printers & Scanners

Clr. LaserWriter 12/600 PS	\$1595
LaserWriter 12/640	\$1289
StyleWriter 6500/4500	\$459/559
StyleWriter 2500	\$199
StyleWriter 1500/2200	\$149/249



HEWLETT PACKARD

DeskJet 870CXi/855C*/CXi	\$795/795/810
DeskJet 1600CM/1600CM*	\$1595/1275
LaserJet 4MV/4MV*	\$299/1949
LaserJet 5MP*/5SIMX/6MP	\$449/329/795
ScanJet 5/5P/4C	\$CALL/399/585

LaserJet 5M 12ppm, 6MB, 600DPI, PSL2, Eth.

L.Jet 6M.... CALL \$1349

UMAX AGFA Scanners In Stock Call for Best Price

SOFTWARE

Super Deals

Adobe Photoshop 4.0	\$345
Adobe Illustrator 7.0	\$239
Adobe PageMaker 6.5	\$289
FractalDesign Painter 5.0	\$259
Macromedia Freehand 7.0	\$239
QuarkXpress 3.32/4.0	\$629/CALL
Connectix Virtual PC	\$139
Insignia SoftWindows 3.11/95	\$59/189
MS Office 4.2.1	\$279
MS Word 6.0.1	\$149
MS Excell 5.0	\$159

Simms & Dimms Best prices!

603e/160MHz Mini Tower	\$895
32MB RAM, 2.5GB HD, 6xGB-ROM, Kb., Mouse	
with STAR Color Printer	
UMAX 604e/200	\$2395
604e Processor 200MHz, 32MB RAM, 2GB HD, 8xGB-ROM, IMS /17" Display, Kb., Mouse	

www.cmpumall.com

STORAGE

CD Recordable

LACIE LIMITED

w/Toast Software

2x6 CD-R	\$389
4x6 CD-R	\$659
CD-R Media 10-Pk.	\$39



Zip scsi / 10 pack Ctrtdg.	\$135/105
Jaz scsi / 5 pack Ctrtdg.	\$369/389

TOSHIBA 2.1GB IDE 2.5" f/PB.	\$269
TOSHIBA 3.08GB IDE 2.5" f/PB.	\$469
Quantum Stratus 2.1GB SCSI-II	\$249
Quantum Atlas 4.5GB SCSI-II	\$699

CIRCLE 434 ON READER SERVICE CARD

MEMORY

"Computer Show" Prices Everyday!

Mohawk Memory Co., Inc.

SIMMS ♦ DIMMS ♦ EDO ♦ ECC ♦
VRAM ♦ CACHE ♦ PRINTER ♦
LAPTOP ♦ POWERBOOK

Fax: (508) 897-0009
Email: simdim@mohawkmem.com
Webstore: www.mohawkmem.com
16A Waltham St. Maynard MA 01754
Visa MC Discover AMEX PO's O.A.C.

1(800) 986-6429

Good Old-Fashioned New England Service

MAC & PC Sales Service Supplies

HW & SW DESIGN
MANUFACTURING SERVICES
MacPortable Specialists

Fax 408-336-3840

→ <http://www.dyneng.com> ←
email sales@dyneng.com

435 Park Dr., Ben Lomond, Ca. 95005

Dynamic Engineering
(408) 336-8891

RAM SIMMS & DIMMS

• LIFETIME WARRANTY •

• POWERBOOK MEMORY
INCLUDING 3400

THE FINEST QUALITY WITH
THE BEST PRICE!

MONITORS • COMPUTERS
MODEMS • PRINTERS
ALL STORAGE DEVICES

1.800.844.8356

FIBER CANYON

<http://www.fibercanyon.com>

CIRCLE 416 ON READER SERVICE CARD

MAC PARTS

All items are used unless otherwise noted.

Complete Systems:

- Mac SE/30 8/80, keyboard, mouse..... \$ 275
- Mac IIfx 8/160, KB, mouse, 14" RGB.... \$ 495
- Mac IIfx 5/80, KB, mouse, 14" RGB.... \$ 430

Parts & Accessories:

- Maxtor 213 MB SCSI HD (new)..... \$ 69
- 1.4 MB superdrive..... \$ 69
- 8-bt1 Nubus video card..... \$ 59
- SE/30 motherboard..... \$ 89
- IIfx motherboard..... \$ 89
- IIfx motherboard..... \$119
- IIfx/IIfx/Q700 power supply..... \$ 45
- IIfx/IIfx power supply..... \$ 25
- ADB mouse, new, ergonomic style..... \$ 25
- MEMORY..... \$ Lowest Prices

We stock lots of hard-to-find items. See our
web site for the latest pricing/inventory info.

<http://www.nexcomp.com>

NEXCOMP

MC/VISA
No surcharge!

Orders: **(888) GET-A-MAC**

Info: (281) 469-4061 Hrs: 9AM-7PM, M-F

CIRCLE 440 ON READER SERVICE CARD

We Manufacture MEMORY

**BUY DIRECT!
SAVE
MONEY!**

DIMMS 5v / 3.3v

32MB \$123 / \$128

64MB \$239 / \$255

SIMMS 72pin SIMMS 30pin

16MB \$62 4MB \$21

32MB \$112 16MB \$65

PowerBooks

3400-32MB \$195 1400-24MB \$167

190-24MB \$160 5300-16MB \$100

Prices are subject to change

Visit our Website for
Complete Up-to-Date Price List
www.apcom.com/acl
www.cybertechmall.com/kpo

ACL, INC. 2155 Bering Dr., San Jose, CA 95131

800-888-0348

CIRCLE 482 ON READER SERVICE CARD

Best Prices

RAM Modems Drives & More

Baber Information Services, Inc.
<http://www.baber.com/mac/>

800-290-0189

CIRCLE 456 ON READER SERVICE CARD

MEMORY

Lifetime Warranty

1-888-808-6242

168 PIN DIMM

8/16MB \$39/69

32MB \$128

64MB \$239

EDO DIMM 3.3V

16/32/64 \$59/159/295

EDO DIMM 5V

16/32/64 \$75/129/249

72 PIN SIMM

4/8MB \$18/32

16MB \$58

32MB \$114

30 PIN SIMM

1/2MB \$9/18

4MB \$22

16MB \$79

PowerBook Memory

PB 1400

16/32/48MB \$110/195/289

PB 3400

32/64/128MB \$195/369/765

PB 5300, 500 & 190

16/24MB \$110/165

32/48MB \$195/295

PB DUO Series

12/20MB \$119/165

28MB \$205

PB DUO 2300

16/32MB \$115/205

40/48MB \$255/300

Memory for Printers Best Prices

Cache and VRAM Best Prices

We Specialize in PowerBook Memory

eritech
INTERNATIONAL, INC.

Phone: (818) 244-6242 ♦ FAX: (818) 500-7699

Internet: <http://www.eritech.com> ♦ e-mail: eritech@sprynet.com

4551 San Fernando Road, Suite 110, Glendale, CA 91204

CIRCLE 469 ON READER SERVICE CARD

AMERICAN MAC & PC

Formerly known as Magic Mac & PC

DRIVES

Quantum Description Int. Ext.

2.1GB Stratus.5400 \$244 \$294

2.1GB Atlas2.7200 \$349 \$389

3.2GB Stratus.5400 \$324 \$374

4.3GB Stratus.5400 \$384 \$434

4.5GB Atlas2.7200 \$694 \$744

6.4GB Stratus.5400 \$494 \$534

9.1GB Atlas2.7200 \$1189 \$1239

1.6GB Stratus.5400 \$184

2.1GB Stratus.5400 \$194

3.2GB Stratus.5400 \$234

4.3GB Stratus.5400 \$284

6.4GB Stratus.5400 \$384

MEDIA

Jaz Qty 12 Qty 35 Qty 10+

Zip \$17 \$15 \$13

SyJet \$96 \$92 \$89

CD Media \$6 \$5 \$4

AMERICAN MEMORY

64-Bit 168pin Dimms

8MB 1X64 60ns \$34

16MB 2X64 60ns \$64

32MB 4X64 60ns \$124

64MB 8X64 60ns \$239

128MB 16X64 60ns \$859

32-Bit 72pin Simms

4MB 1X32 60ns \$19

8MB 2X32 60ns \$36

16MB 4X32 60ns \$59

32MB 8X32 60ns \$119

64MB 16X32 60ns \$354

Buy Factory Direct !! at Guaranteed low Prices

We Carry memory for all Macs and PCs. All covered by our Lifetime Warrantee

POWERBOOK RAM

PB500 8MB \$74 \$94 \$194

PB 190/5300 \$79 \$100 \$189 \$289

PB150 \$89 \$109 \$189 \$289

PB1400 \$89 \$109 \$189 \$289 \$419

PB3400 \$89 \$109 \$189 \$289 \$419

Pricing is subject to change without notice

Returns must be accompanied by an RMA number. RMA's are subject to a restocking fee. Customers may be responsible for return freight.

20437 Mt. Lemoore, Unit 1A, Fountain Valley, CA 92703

(714) 968-1979 Ph. (714) 968-9999 Fx.

Call Free (888) 910-0900

AMERICAN MAC & PC

ACCELERATORS

MACH SPEED 180MHz \$369

MACH SPEED 200MHz \$549

MACH SPEED 225MHz \$729

MACH SPEED 233MHz \$924

MAXpowr 200MHz \$624

MAXpowr 225MHz \$859

MAXpowr 400MHz \$1369

VIDEO RAM

1MB Vram 7xxx, 8xxx PC \$22

2MB Vram for ATI \$64

2MB Vram for 4400, Starmax \$29

4MB Vram for 4400, Starmax \$89

REMOVABLE

Zip 100MB \$137

Jaz 168 Ext w/Cart \$349

Syquest Sujet 1.5GB \$429

Yamaha 4x/6x CDR Ext \$698

CACHE MEMORY

256K Cache 4400, 6400 \$62

512K Cache 4400, 6400 \$88

256K 7xxx, 8xxx PCI \$44

512K 7xxx, 8xxx PCI \$74

**XLR8 Vision Series™
Video Graphics
Accelerators**

PIXEL POWER

Designed with today's sophisticated video graphics users in mind, the Vision Series video upgrades from XLR8 are true video accelerators. Featuring QuickTime™, QuickDraw™ 3D and MPEG™ playback acceleration, real time, full screen video playback at 30 fps, refresh rates up to 100 kilohertz and support for Sony's® new 24" monitor, the Vision Series sets the standard for visual perfection and performance.

ClubMac®

1-800-217-9153

CYBERIAN Outpost

WWW.CYBOUT.COM

MacMall

1-800-222-2808

MacWAREHOUSE

1-800-255-6227

1-800-255-6227

The Mac Zone

1-800-248-0800

XLR8

Because Faster Is Always Better™

Official Trade Show Supplier for:

MetaTools

8447 E. 35th Street North
Wichita, Kansas 67226 • 1-888-XLR8TOR
visit us on the Web at: www.xlr8.com

CIRCLE 414 ON READER SERVICE CARD



MAC & PC MEMORY

**LIFETIME MEMORY REPLACEMENT GUARANTEE
30 DAY MONEY BACK GUARANTEE**

Data Memory Systems
24 Keewaydin Dr.
Salem, NH 03079
Tel: 603-898-7750
Fax: 603-898-6585
E-mail: sales@inc-net.com

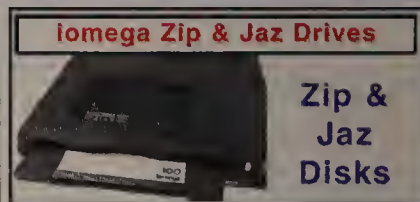
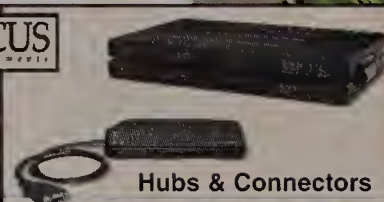
FOCUS
enhancements

GLOBAL VILLAGE
COMMUNICATION

i
omega

**DMS
WILL NOT
BE
UNDERSOLD
ON MEMORY PRODUCTS**

•SIMMs •DIMMs •VRAM •CACHE
•Printer Memory •EDO Memory
•Modems •Network Products
•PowerBook & Notebook Memory
Upgrades



ORDER ON-LINE 24 HOURS @ <http://www.datamem.com/macworld>

CALL 1-800-662-7466 TOLL FREE

University, Government & Corporate P.O.s with Approved Credit

CIRCLE 447 ON READER SERVICE CARD



The LLB Company, Inc.

1-800-848-8967



Email: sales@llb.com International:206.746.0229 Fax:206.746.5168

DESKTOP MEMORY UPGRADES

168-Pin 60ns DIMMs

PowerMacs Series - 60ns		
Module	Item#	Price
128MB	12864	\$1024
64MB	64764	\$250
32MB	32764	\$125
16/8MB	16764	\$70/45

EDO 3.3v 60ns DIMMs

Starmax & PowerM 4400		
Module	Item#	Price
64MB	64764EDO3.3	\$265
32MB	32764EDO3.3	\$145
16MB	16764EDO3.3	\$89
8MB	8764EDO3.3	\$46

EDO 5v 60ns DIMMs

Power Base Series		
Module	Item#	Price
64MB	64764EDO5V	\$258
32MB	32764EDO5V	\$146
16MB	16764EDO5V	\$83
8MB	8764EDO5V	\$55

72-Pin SIMMs

etc etc etc etc		
Module	Item#	Price
32MB	32632	\$120
16MB	16732	\$64
8MB	8032	\$39
4MB	4032	\$21

30-Pin SIMMs

etc etc etc etc		
Module	Item#	Price
16MB	1601	\$124
8MB	8888	\$58
4MB	4000	\$25
2MB	2000	\$18

POWERBOOK MEMORY UPGRADES

POWERBOOK 2400

Module	Item#	Price
64MB	PB2400-64	\$475
32MB	PB2400-32	\$245
16MB	PB2400-16	\$111
8MB	PB2400-8	\$62

POWERBOOK 2300

Module	Item#	Price
48MB	PB2300-48	\$327
32MB	PB2300-32	\$209
20MB	PB2300-20	\$162
16MB	PB2300-16	\$118
8MB	PB2300-8	\$63

POWERBOOK 3400

Module	Item#	Price
128MB	PB3400-128	\$994
96MB	PB3400-96	\$890
64MB	PB3400-64	\$419
32MB	PB3400-32	\$204
24MB	PB3400-24	\$147

POWERBOOK DUO

Module	Item#	Price
36MB	PBDUO-36	\$268
28MB	PBDUO-28	\$239
20MB	PBDUO-20	\$155
14MB	PBDUO-14	\$115
12MB	PBDUO-12	\$109

POWERBOOK 5300

Module	Item#	Price
48MB	PB5300-64	\$250
32MB	PB5300-32	\$212
16MB	PB5300-16	\$115
8MB	PB5300-8	\$65

POWERBOOK 1400

Module	Item#	Price
24MB	PB1400-24	\$167
16MB	PB1400-16	\$120
8MB	PB1400-8	\$75

POWERBOOK 500

Module	Item#	Price
32MB	PB500-32	\$175
16MB	PB500-16	\$107
8MB	PB500-8	\$72
4MB	PB500-4	\$62

POWERBOOK 150

Module	Item#	Price
28MB	PB150-28	\$219
20MB	PB150-20	\$170
14MB	PB150-14	\$115
8MB	PB150-8	\$70

DRIVES



Zip Drive (w/cart) \$149
Jazz Drive (w/cart) \$399



Q 1.2 GB (int) 4500RPM \$259
Q 2.1 GB (Int) 5400RPM \$287
Q 2.1 GB (Ext) 5400RPM \$375
Q 3.2 GB (Int) 5400RPM \$367
Q 4.5 GB (Ext) 7200RPM \$689
Q 9.1 GB (Ext) 7200RPM \$1265

MONITORS

NEC

HOT!

NEC A500 15" Multisync \$372
NEC A700 17" Multisync \$677
NEC E500 15" Multisync \$404
NEC E700 14" Multisync \$723

SONY

SO 200SF 17" Multiscan \$771
SO 300SF 20" Triniton \$1618

ViewSonic

VS 15VGA 15" Optique \$284
VS 17GS 17" 17GS \$583

PRINTERS & SCANNERS

Astra 1200

UMAX[®]
Computer Corporation

\$686

Astra 600 \$208
Astra 1200 w/Full PS & Trans \$686

EPSON

Stylus 600 Inkjet

\$319

Stylus 800 Inkjet \$466
Expression 636 Executive \$805
Stylus Color 1520 \$807
Stylus Color 30000 \$1922

HEWLETT[®] PACKARD

Laserjet 4MV 600 DPI \$2795
Laserjet 6MP 600 DPI \$927

MODEMS

GLOBAL VILLAGE
COMMUNICATION

As Low As \$149

Teleport 56 K56 Flex Ext \$184
Teleport 33.6 Mac Internet Ed. \$149
Powerport Platinum PC Card \$218

DIAMOND

MULTIMEDIA
SUPRA Express 56e K56 Flex Sp \$195
SUPRA Express 56e K56 Flex Ext \$166
SUPRA Express v.34 Ext 14.4 S/R \$90

U-Robotics[®]

The Intelligent Choice in Data Communications
Sportster 56K X2 Ext Fax \$211
Sportster 33.6 Ext w/voice(14.4 Fax) \$99
Sportster 33.6 v.34 w/Internet s/w \$167



MOTOROLA STARMAX



StarMax	Speed/Processor	Price
AMT 54200	200MHZ 604E	\$3237
AMT 53275 E	275MHZ 603E	\$2562
AMT 53250 S	250MHZ 603E	\$2181
AMT 53300	300MHZ 603E	\$2790
AMT 53300-G	300MHZ 603E	\$3273
AMT 3240 E	240MHZ 603E	\$2444
AMT6233 PRO	233MHZ A5KB	\$3755
AMT6266 PRO	266MHZ A5KB	\$4402

E-Ethernet/Enterprise Software BNDL S-Small Office/Home Office BNDL
G=Video Graphics Card/Twin Turbo w/8MB; 3D

UMAX[®] SUPERMAC SYSTEMS

SuperMac	Processor/Speed	
UCC 500L-180E	603E 180MHz (E)	\$1095
UCC 500LT-180	603E 180MHz(LT)	\$946
UCC 600L-200	603E 200MHz	\$1275
UCC 600L-280E	603E 280MHz(E)	\$2355
UCJ 700L-180	604E 180MHz	\$1775
UCS 900L-200	604E 200MHz	\$2492
UCS 900L-250	604E 250MHz	\$3600
UCS 900L-180D	604E 180MHz(DP)	\$2875

Electronic Orders: E-Mail:sales@llb.com · Web Site: Under Reconstruction...Please bear with us.... · PO's are accepted upon approval

· All major credit cards accepted and charged when order is shipped · No surcharge on credit cards · Prices subject to change

· Open 6am to 7pm M-F, 8am to 1pm Sat.PST · Returns subject to restocking fee · Not responsible for errors · We welcome International orders

· Orders received before 8:00p.m. EST weekdays shipped same day

Memory & Upgrades

Macworld

SHOPPER

Shadow Technologies
(800) 4-SHADOW
474-2369

PowerBook Memory

PB 3400
16M/32M/48M/64M
\$94/\$184/\$269/\$369

PB 5300/190
16M/32M/48M
\$98/\$189/\$284

PB 2300
16M/32M/48M
\$109/\$218/\$309

PB 1400
16M/24M/32M/48M
\$98/\$139/\$196/\$278

PB 520/510
16M/32M
\$109/\$189

Cache
61/71/8100 256K \$14
72/73/75/76/85/\$600
256K/512K/1M
\$43 / \$72 / \$142
44/6360/54/55/64/65
\$62/\$88/\$189

VRAM
1M DIMM \$22

SONNET
233MHz 604e
\$799 !!
PMac 7300-9600
& Most Clones
& Shipping
is Free !!

Low Price \$\$ Guarantee:
If any advertiser offers a lower price on comparable modules (new, late date codes, name brand chips) Shadow will strive to beat their best price by 2% - Call us LAST and SAVE !!

Mac's/Clones/Laptops

72 pin SIMMs
5V FP/EDO
4MB \$17
8MB \$33
16MB \$54
32MB \$107
60 nsec

30 pin SIMM
4M/8M/16M
\$21/\$49/\$89

2K
New! No Credit Card Surcharge
Lifetime Warranty!

CPUPGRADE
PowerPC Accelerator

Call for Volume Discounts
Govt. Edu/Corp. PO's OK with Approved Credit

Address Verification Used to Prevent Credit Fraud

VISA **MasterCard**

TOSHIBA FUJITSU OKI NEC
MOTOROLA MICRON SAMSUNG MITSUBISHI

memory

CALL FOR CURRENT BEST PRICES M-F 9-7P
1-800-832-8802

OUR PRICES ARE THE BEST. NO MATTER WHAT'S BEEN ADVERTISED IN THIS MAGAZINE! MAKE SURE TO CALL US!

all items are new!
lifetime warranty!
TOP quality!

30pin 4MB SIMM \$21
shipping from \$4

SIMM
72 pin FPM 2x 60ns
16MB \$ 51 ea
32MB \$102 ea
64MB \$289 ea

DIMM
168 pin FPM 2x 60ns
16MB \$ 62 ea
32MB \$119 ea
64MB \$229 ea

www.anrweb.com
CALL OR VISIT OUR STORE AT
1221 WEST 6TH STREET STE. C AUSTIN, TX 78703
PH. 512-474-2414 FAX 512-474-5514

a&R computing
VISA • Mastercard • Discover
NO SURCHARGE FOR CREDIT CARDS
prices subject to change

CIRCLE 411 ON READER SERVICE CARD

800-671-3686
MAC REPAIRS & UPGRADES

Le r o m p u t e r

1 Gig SCSI Conner199
4.3Gig SCSI Quantum699
9.1Gig SCSI Fujitsu1099

USED CPU/MONITORS

7600 16/1.2/8x/132Mh1499
1400 cs 8/750/8xCD1499
Quad 800 24/1G/2XCD650
Ci 64Mb/540/67MHz599
CX 8Mb/80Mb150
SE 4Mb/20Mb89
20" Sony High Res799
21" Cornerstone HR899
17" NEC499
15" NEC349

DIGITAL IMAGING

Canon Powershot600699
Olympus D200L599
Olympus D300L849
Minolta RD1754995
Konica Q-Mini599
Polaroid Pro-Palette 8000call
Polaroid Sprintscan 45call
Polaroid Sprintscan35 Pluscall
Fuji Pictography 3000call
N'kon Coolscan II1149
Nikon Super Coolscan1799
Fuji DS-3002495
N'kon DCS-2002500

SIMMS
4mb19
8mb39
16mb81
32mb161

DIMMS
8mb62
16mb89
32mb169
64mb299

4040 Quaker Bridge Rd Mercerville, NJ 08619

CIRCLE 422 ON READER SERVICE CARD

MEMORY

Lifetime Warranty!
BEST PRICES!
Apple® Authorized Value-Added Reseller

168 Pin DIMMs	PBook 5/53/14/34	Specials
8mb \$ 35	8mb \$ 60	GV 56k In Stock \$Call
16mb \$ 68	16mb \$ 99	Quantum 4.2 gb \$399
32mb \$ 128	24mb \$ 155	Iomega Zip Drive \$ 140
64mb \$ 250	32mb \$ 198	Jaz Carts In Stock \$ 95

72 Pin SIMMs	30 Pin SIMMs	Cache/VRAM
4mb \$ 13	1mb \$ 10	61/71/81 256k \$ 12
8mb \$ 29	2mb \$ 15	64/54 256k \$ 65
16mb \$ 56	4mb \$ 22	72/76/85 512k \$ 80
32mb \$ 115	16mb \$ 78	1 mb VRAM \$ 25

All prices are subject to change. Limited to stock on hand. #812

WE BUY, SELL & TRADE MACS!
CALL (800)80-WE-BUY

11933 Wilshire, West Los Angeles, CA 90025
Tel: (310) 966-4444 Fax: (310) 966-4433
www.macsolutions.com

University & School P.O.'s Welcome
VISA-MasterCard-AMEX no surcharge

MAC Solutions

(800)873-3RAM

CIRCLE 410 ON READER SERVICE CARD

OUR GOAL IS TO BEAT OUR COMPETITOR'S PRICES
CALL US LAST FOR A SPECIAL DISCOUNT!

MEMORY NEW DRIVES NEW

30 PINS SIMM
72 PINS SIMM
168 PINS DIMMS

EDO SIMMS
EDO DIMMS

VIDEO RAM
CACHE CARD

POWERBOOK MEMORY
ALL SERIES AVAILABLE

PRINTER MEMORY
MAJOR BRANDS AVAILABLE

LIFETIME WARRANTY ON MEMORIES
ACCELERATORS

1-800-427-2021
HBR ENTERPRISES

11628 SANTA MONICA BLVD.#201 LA, CA, 90025
M-F 7:30AM - 6PM SAT 10AM - 3PM
FAX 1-310-826-2573
INTERNATION. 1-310-826-3363

TERMS: VISA, MC., AMX., DISCOVER,
PRE-PAID, C.O.D & APPROVED P.O.s
<http://www.hbrcomp.com>

RETURN ITEMS ARE SUBJECT TO APPROVAL AND RESTOCKING FEE. PRICES SUBJECT TO CHANGE

CIRCLE 452 ON READER SERVICE CARD

Run Your Mac Faster & Save!



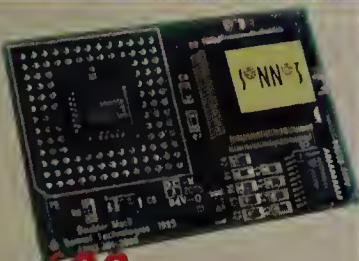
**Accelerate Mac LC,
LC II, Color Classic,
IICI, IISI, IIVX, II, IICX,
IIX, or Performa 600 to
'040 Speed Starting at \$199**

Sonnet Presto™ LC 040 50/25 MHz accelerators increase Mac LC, LC II, or Color Classic performance 470% as fast as a stock machine (processor performance, MacBench2). Use RAMDoubler or Virtual Memory to break the 10MB barrier with the Presto LC (except Mac LC). The Presto LC is only \$199, or with a hardware Floating Point Unit (FPU) \$249.

The 80/40MHz version for the Mac IICI, IISI*, IIVX, II*, IICX*, IIX* or Performa 600 increases processor performance by 300-500%. The 80/40 MHz Presto at only \$299 includes 128K level 2 cache, or \$399 with FPU too.

Prestos are 100% application software compatible and run through System 7.6.1. System 8 support is planned for October 1997. The Prestos are easy to install in the Macs' processor direct slot or socket. (*Adapter required)

**Allegro's Fast 68030s
Give New Life to Mac
SE, SE/30, II, IIX, LC,
LC II, Color Classic from \$99**

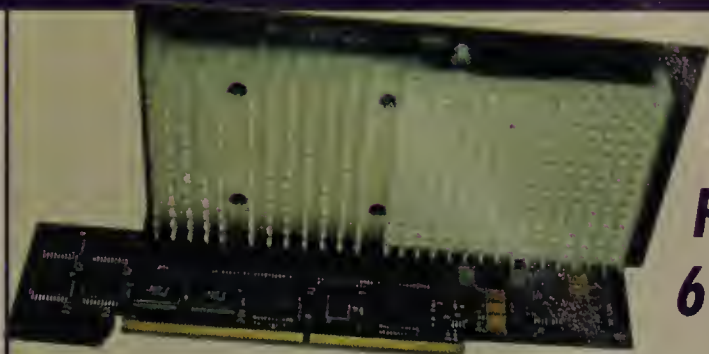


Give your Mac more muscle. Sonnet Allegros™ are packed with features at bargain prices. The 33MHz Allegro LC for the Mac LC, LC II, Color Classic doubles your cpu speed, adds 16K level 2 cache and includes an FPU—all for only \$149. The 33MHz Allegro SE increases performance 460%, includes an FPU and 4 SIMM slots to expand memory up to 16MB for a bargain \$199. Allegro Mac II, IIX, SE/30 models double '030 speed to 33MHz for \$99.



PPC Processor Cards
150MHz 604 \$179
200MHz 604e \$499
233MHz 604e \$799
360MHz 604eMP \$899

Give your Power Mac 7300, 7500, 7600, 8500, 8600, 9500, 9600, PowerTower, PowerWave, PowerCenter, SuperMac J700 or S900 series a PowerPC 604/604e upgrade. These power-packed upgrades are 100% compatible. Add multiprocessing for superfast Adobe Photoshop, Premier, AfterEffects, and 3-D rendering. Add 1MB cache & double performance! MP multiprocessing by Daystar Digital.



**132MHz
604 for
PowerMac
6100...\$399**

The Sonnet Crescendo™ accelerator speeds a Power Mac 6100 or Performa 611X to run as fast as the original Power Mac 9500! Upgrade the tired 60 or 66 MHz PowerPC 601 processor to a 120 or 132 MHz PowerPC 604 CPU, respectively. The Crescendo upgrade plugs into the PDS slot for easy user installation. Run System 8 and all applications faster than you ever thought possible for much less than the cost of a new machine.

New!

**Run the Fastest
Quadra Ever!
100/50 MHz is
Faster than 840AV**



**Only
\$399**

Plug the Sonnet QuadDoubler™ into a Quadra 610, 660AV, 700, 900, or Centris 610*, 660AV, 650 and run virtually twice as fast as before for only \$399. The QuadDoubler is System 8 compatible! Just plug the QuadDoubler into your CPU socket and power up your Mac. A CPU extraction tool is even included to simplify installation. The QuadDoubler includes a Floating Point Unit for superfast rendering or calculations. *The Centris 610 QuadDoubler runs at 80/40 MHz and is value-priced at \$299 (without FPU \$199).



**Add Math Coprocessor to
68040 Macs & PowerBooks**

Give your Quadra, Centris, or PowerBook 520/540 a math coprocessor for rendering, Photoshop, CAD, or other Math intensive applications. 25MHz 68040 \$125*, 33MHz 68040 with heat sink \$169*. Add a full 66/33MHz 68040 with FPU to your PowerBook 520 or 540 for \$199*. This also speeds 520 to 66/33MHz. Call for PB190, Duo280 FPU. *68LC040 trade-in req'd.

Cache Speeds!

PowerMac with 1MB cache runs 2x as fast as cache-less (200MHz 604e, MacBench 4). We build 'em. Resellers call.



256K	6100/7100/7200/7500/8500	\$49
512K	7200/7300/7500/7600/8500/8600	\$69
1M	7200/7300/7500/7600/8500/8600	\$149
256K	6360/5400/5500/6400/6500/StarMax	\$65
512K	6360/5400/5500/6400/6500/StarMax	\$95
1M	6360/5400/5500/6400/6500/StarMax	\$199

**"The smartest
way to bump
performance!"**



SONNET TECHNOLOGIES, INC.
18004 Sky Park Circle, Irvine, California 92614
714-261-2800 Fax 261-2461 sales@sonnettech.com

800-786-6260

<http://www.sonnettech.com>



VISA and MasterCard no surcharge. We used to have a surcharge; we don't anymore. Government, corporate and education P.O.s welcome. Albino tests every product thoroughly before we ship it to you. Whenever he is not offending to quality, he is teaching his young sons to play soccer. One year limited warranty on all products. If you step on it and break it we limit the warranty, otherwise we don't limit it too much. All returns require an authorization and are subject to a restocking fee. ©1997 Sonnet Technologies, Inc. Sonnet, the Sonnet Logo, Allegro, Crescendo, Presto and QuadDoubler are trademarks of Sonnet Technologies.

CIRCLE 463 ON READER SERVICE CARD

DRIVES MEMORY

Quantum 5 Year Warranty!



2.1 Gig
Stratus

5400rpm/10ms Ultra SCSI 3

\$245
STS32150

3.2 GB Stratus	10ms	5400	US3	STS3324	\$319
4.3 GB Stratus	10ms	5400	US3	STS3432	\$379
6.4 GB Stratus	10ms	5400	US3	STS3648	\$479
4.5 GB Atlas II	8.0ms	7200	US3	ALS3455	\$699
9.1 GB Atlas II	8.0ms	7200	US3	ALS34550	\$1199

Seagate 5 Year Warranty!

9.1 GB Barracuda	8ms	7200	FS2	ST19171N	\$1279
4.5 GB Cheetah	8ms	10000	US3	ST34501N	\$849
23 GB Elite	8ms	10000	US3	ST423451N	\$2379

IBM 5 Year Warranty!

2.1 GB UltraStar	8.5ms	5400	US3	IBM21ES	\$359
4.3 GB UltraStar	8.5ms	5400	US3	IBM43ES	\$459

MICROPOLIS 5 Year Warranty!

2.1 GB	9ms	5400	US3	MC4321	\$349
4.5 GB	7.9ms	7200	US3	MC4345	\$699
9.1 GB	8.5ms	7200	US3	MC3391	\$1175

Western Digital 5 Year Warranty!

2.1 GB Enterprise	8ms	7200	US3	WDE2170	\$479
4.3 GB Enterprise	8ms	7200	US3	WDE4360	\$699

PROCESSOR UPGRADES

StarMax



PowerComputing

CPU	Speed	Price
PPC604e Card	166Mhz	\$239
PPC604e Card	180Mhz	\$289
PPC604e Card	200Mhz	\$469
PPC604e Card	225Mhz	\$729
PPC604e Card	233Mhz	\$839

SOURCE
TECHNOLOGIES

800-900-4599

http://www.sources-technologies.com

VOICE 954-725-9777 • FAX 954-725-9977

All products feature a 30 day money back guarantee. All memory products are brand new and carry a limited lifetime warranty. Government and educational PO's are welcome. No surcharges on credit cards. Prices are subject to change without notice!



30 DAY MONEY BACK GUARANTEE

SIMMS 72 Pin 60/70ns DIMMS 168 Pin /EDO 3.3

4MB.....	\$18	8MB.....	\$41/43
8MB.....	\$29	16MB.....	\$63/69
16MB.....	\$53	32MB.....	\$115/119
32MB.....	\$105	64MB.....	\$225/235

30 PIN SIMM 60 70ns

1 MB.....	\$9
2 MB.....	\$15
4 MB.....	\$21
16MB.....	\$75

POWERBOOK RAM 500/5300/190

4 MB.....	\$45
8 MB.....	\$59
16 MB.....	\$89
32 MB.....	\$175
48 MB.....	\$279

PB 1400/3400 8-128 MB INSTOCK...\$CALL!

L2 CACHE

256k-61/71/81xx.....	\$13
256k/512k-72/73/75/76/85xx.....	\$45/75
256k/512K-44/54/64/65xx.....	\$63/89
1MB-61/71/81xx.....	\$119
1MB-72/73/75/76/85/86xx.....	\$145

VRAM

256k/512k VRAM Q/C/71/81.....	\$13/19
1MB Powermac.....	\$21
2MB ATI/STARMAX.....	\$55/29

LOWEST PRICES GUARANTEED!!!

CIRCLE 409 ON READER SERVICE CARD

MEMORY

Mactell Corporation

www.mactell.com

Web Order Prices

DIMMS	SIMMS
32Mb \$124	16Mb \$71
64Mb \$279	32Mb \$130

3.3V EDO DIMMS	5V
32Mb \$124	32Mb \$124
64Mb \$233	64Mb \$233

PowerBooks

3400-24Mb	\$150	1400-24Mb	\$143
190-24Mb	\$165	5300-24Mb	\$151

High Quality • Lifetime Warranty • 2k Refresh

Prices are subject to change

info@mactell.com Fax: 512/323-6394

We accept MasterCard, Visa, American Express, & Discover

888-622-8355

DATA RECOVERY: 800-440-1904

7 good reasons to choose DriveSavers:



1. We're the most trusted and respected data recovery specialists.
2. 24-hour, onsite, and weekend service available.
3. Proprietary techniques so advanced we retrieve data others might simply abandon.
4. Over 12 years of data recovery experience.
5. Certified to maintain most drive warranties.
6. Featured by CNN, NextStep, C-Net, Forbes.
7. All storage devices; DOS, Win95, WinNT, OS/2, Mac OS, UNIX, Sun, SGI, Novell.

©1997 DRIVESAVERS, INC.

Clip and save this ad. Visit DriveSavers at: www.drivesavers.com

DRIVESAVERS, INC. 400 BEL MARIN KEYS BLVD., NOVATO, CA 94949, INTL.: 415-382-2000, FAX: 415-883-0780

CIRCLE 510 ON READER SERVICE CARD

MEMORY

Lifetime Warranty!

BEST PRICES!



11933 Wilshire Bl.
W. Los Angeles, CA 90025
www.macsolutions.com

DIMMS
SIMMS
VRAM
CACHE

(800)873-3RAM

Tel: (310) 966-4444 Fax: (310) 966-4433

CIRCLE 453 ON READER SERVICE CARD

MAC REPAIR & UPGRADE

24 HOUR SERVICE TURNAROUND • LONGER WARRANTY
FREE DIAGNOSTIC • COMPETITIVE PRICE



DT & T

MACINTOSH
SERVICES, INC.

800-622-7977

720 East Evelyn Ave., Sunnyvale, CA 94086 • Tel: 408-720-9899 • Fax: 408-720-9459

http://www.dttservice.com

CIRCLE 504 ON READER SERVICE CARD

Data Recovery in hours.

- Over 10 years of experience with clients worldwide including Apple, NASA, HP, and FedEx.
- We've recovered more than half-a-million megabytes of Mac Data alone.
- You only pay when there's a recovery.
- Express One-Day Service is available.
- Call 24 hours a day.

415-495-5556 • FAX 415-495-5553 • RESTRICTIONS MAY APPLY
381 Clementina Street • San Francisco, California 94103



LAZARUS
DATA RECOVERY

Working at the speed of business.

800-341-DATA

CIRCLE 427 ON READER SERVICE CARD

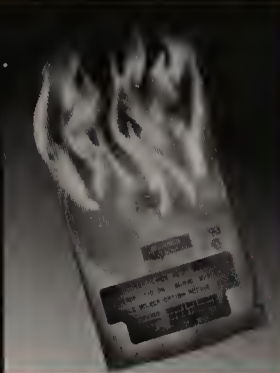
PROFESSIONAL DATA RECOVERY SERVICES.

Hard Drives, Floppy Drives, Syquest,
EZ-135, ZIP, JAZ, Optical & Bernoulli.

TOTAL RECALL[®]
THE DATA RECOVERY COMPANY™

800-743-0594 VISIT US AT... www.recallusa.com

1575 N. WYNOKA ROAD • COLO SPRINGS CO 80915 • TEL (719) 380-1616 • FAX (719) 380-7022
CIRCLE 458 ON READER SERVICE CARD

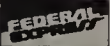


MAC REPAIR

Mac Shop Northwest
WWW.MACSHOP.COM

- Apple™ Certified Technicians
- One-Day Service Turnaround*
- Hard Disk Repair & Data Recovery
- Up to 75% below Dealer Rates
- Component-Level Repairs
- Expert Advice and Prices by Phone
- Power Supplies & Logic Boards
- Lifetime Repair Warranty*

Tel: 1-503-642-3456
*on many repairs. Visa/MC/AX. Fast overnight shipping available. We use genuine Apple™ parts.



1-800-MAC-SHOP

CIRCLE 515 ON READER SERVICE CARD

Excellent Prices
Technical Help
Quick Service
Quality Work

OVERNIGHT

Digital Output PC or Mac
Send PC/Mac files by FTP or Priority Air Express to Imagers and for most output services, your finished work is in your hands the very next morning.

DIGITAL 4 COLOR OFFSET PRINTING

QuickMaster
HEIDELBERG
Print all you need!

indigo
Print only what you need!

Color press proofs overnight. Upon approval, print run in 24-48 hours. Brochures, Business Cards, Labels, Postcards, Newsletters, Booklets...

FILM SCANNING

Kodak
PHOTO CD
SERVICE PROVIDER

Improved Pro scans from 35mm to 4x5 formats are \$8 each and 35mm scans to the Master Photo CD are \$.90. Great for print, posters, & NewMedia uses.

BIG COLOR POSTERS

DisplayMaker

Digital color posters for presentations, retail, & transit...as low as \$6/sq.ft.

DIGITAL COLOR LASERS



XEROX
DocuColor 40
Single or double-sided quality color laser printing... On-demand printing - fast!
As low as \$.50 per side



SLIDE IMAGING
Overnight is \$4.95. Economy is \$3.00 in 48+ hours.

A FEW OF OUR OTHER SERVICES...
4x5(8k) negative, pos., b&w output...\$35
Fujix photographic color prints...\$10.00

IMAGERS
Digital Production Center
INFO & QUOTES on the web
800.232.5411 or 404.351.5800
1575 Northside Dr. Ste. 490 Atlanta 30318
www.imagers.com

CIRCLE 435 ON READER SERVICE CARD

WE SPECIALIZE IN WHOLESALE WATERLESS COLOR PRINTING

1000 FULL COLOR BUSINESS CARDS FOR \$100 Sug. retail price \$179
1000 FULL COLOR POSTCARDS FOR \$149 Sug. retail price \$249

Printed waterless at 300 line screen from your computer files on Super Premium 10pt. Kromekote with our FREE scratch-resistant aqueous coating.

Serving Your Worldwide Transportation Needs

Stonier
TRANSPORTATION COMPANY

Brent L. Wyble
Senior Project Coordinator
Intermodal Operations - Logistics Division
2315 Beach Boulevard • Suite 104
Jacksonville Beach, FL 32250
PH: (800) 874-3315
PH: (904) 247-4336
Fax: (904) 247-4371

Save Money!
Upload Your Files
to Our FTP Site at
ftp.copycraft.com

- BUSINESS CARDS
- POSTCARDS
- CD INSERTS
- CD TRAY LINERS
- BROCHURES
- BOOKLETS
- NEWSLETTERS
- POSTERS & MORE

Tommy Hulihan

4540
SOUTHSIDE BLVD
SUITE 402
JACKSONVILLE
FL 32216

Paper Products

PH: 904.645.3336
PH: 1.800.894.1610
FX: 1.800.898.5805

FEATURING 300 LINE SCREEN WATERLESS OFFSET PRINTING

Rates for Brochures, Booklets and Flat Sheets are also available.

4-COLOR WATERLESS SPECIAL **10,000 8-PAGE BOOKLETS** **\$2380**
8.5" x 5.5" Booklets printed from your files on 80 lb. Fortune Gloss Text. Includes full bleed, folding, collating, stitching and aqueous coating.
Get 5,000 for only \$1563. SUGGESTED RETAIL \$3661

GRAPHIC ARTS
AVAILABLE



Copy Craft
PRINTERS, INC.

4413 82nd Street • Lubbock, TX 79424 • FAX: 806.794.1305

QUARK
Authorized Service Bureau

Factory Authorized
COREL
Service Bureau

Email your requests for printing quotes to request@copycraft.com

1.800.794.5594

CALL TODAY FOR A FREE COPY OF OUR NEW FULL COLOR CATALOG

Visit <http://www.copycraft.com> for more 4-Color Specials!

CIRCLE 426 ON READER SERVICE CARD

www.macworld.com/buyers/shframed.htm



Want bargains
online?

Bookmark the
Mac Shopper at:



Contact Macworld on
how to advertise.
(800) 888-8622

Be Your Own ISP

Don't spend thousands of dollars starting your own local ISP — join our reseller network to provide nationwide dial-up access and web hosting. Visit our website for details.

- Nation-wide dial-up access
- Investment as low as \$500
- All start-up materials provided
- No technical experience required

 **Skyspan**

www.skyspan.net

ONTRACK DATA RECOVERY

The World Leader
in Professional
Data Recovery Services!

- Mac Specialists
- Any Media
- All Operating Systems
- Emergency Services

Mention this
ad for a FREE
diagnostic
evaluation!

Ontrack
DATA RECOVERY

Mpls • LA • DC • London • Tokyo • Stuttgart

1-800-872-2599

www.ontrack.com

©1996 Ontrack Data Recovery, Inc.

CIRCLE 459 ON READER SERVICE CARD

Direct-To-Press!

Get the Quality of Heidelberg QuickMaster-DI from Your Digital File.

\$90

1000 Full Color Business Cards

Printed on Premium 10 pt. Kromekote

888 • 20UTPUT

Other Services: Film Output (up to 30x40; \$50@8.5x11, film + Color Key); Rainbow (\$26@11x17); Fiery (\$7.5@8.5x11); NovaJet Poster (up to 50" wide, \$7/sq. ft.); Drum Scan (\$25@8.5x11).

All prices exclude shipping and tax. Prices subject to change without notice. Printing done in the USA.

CIRCLE 476 ON READER SERVICE CARD

DIGITAL OUTPUT SERVICES

50% OFF
YOUR FIRST JOB

MAC & PC FILES ACCEPTED

- Linotronic output up to 3386 dpi
- Dye-Sublimation ■ Big Color Posters
- Color Laser Prints/Copies ■ Wax Thermal

Fastest turnaround and lowest prices
Rush service and troubleshooting specialists
Since 1986

SPECTRUM ARTS, LTD.

7455 New Ridge Rd. Suite E Hanover MD 21076
800-788-1357 410-691-7715 301-621-1181
www.spectrumarts.com

CIRCLE 465 ON READER SERVICE CARD

DIGITAL IMAGING

Slides & Negatives \$3.75

4x5 chromes/negs \$30

Large Posters & Displays

Scanning High & Low Res

Photo CD Scans & LVT Output

Short Run 1200 dpi Color Output

Quantity Prints, Slides, Overheads

Show & Tell 39 W 38th St., NY, NY 10018

212 840 2912 • 212 840 7953 (fax)

CIRCLE 550 ON READER SERVICE CARD

**Buy Smart
with
Editors' Choice.**

MACWORLD EDITORS' CHOICE

Macworld

**EDITORS'
CHOICE**

★★★★★


To buy smart when choosing Macintosh hardware or software, you need an expert's opinion.

Fortunately, the experts at Macworld are more

than willing to give you theirs. Just leaf through the pages of this issue — or any issue of Macworld. Wherever you see Editors' Choice, you can be sure the product has passed the most rigorous tests for performance and quality in its class. And comes out a winner.

Our reviewers scrutinize just about every Mac product that hits the market. If it wins us over, you can't go wrong.

Macworld
THE ESSENTIAL MACINTOSH® RESOURCE



A pointed reminder to stay on top of publishing technology.

The publishing landscape is dramatically changing. New technologies are redefining graphic design, the Internet, photography, prepress and printing. Their widespread impact will be felt for years to come.

Seybold San Francisco, the world's most comprehensive and respected publishing forum, gives you an unobstructed view of these breakthrough technologies. From innovative new products to money-making best practices, we'll show you exactly what it takes to be a 21st-century publisher.

60+ Conference Sessions provide an intensive look at new markets/solutions

Special Interest Seminars guide you to profitable, emerging technologies

In-depth Tutorials quickly raise your expertise with the latest publishing tools

350 top companies demo thousands of products for your business

**FREE GUIDE & EXPO PASS
SAVE \$50**

No one under 16 admitted, including infants. For your detailed Advance Program Guide and a FREE 3-day Exposition pass:

CALL: 1-888-800-8922

INT'L: +1-415-372-7072

WWW.SEBOLDSEMINARS.COM



SEYBOLD SF

PUBLISHING 97

MOSCONE CENTER

Main Conference:	Sept. 29-Oct. 1, 1997
Seminars/Tutorials:	Sept. 29-Oct. 3, 1997
3-Day Exposition:	October 1-3, 1997

SW97AD10

DIRECTORY

Macworld
DIRECTORY

ACCOUNTING SOFTWARE

COMPLETE BUSINESS SOLUTIONS

One-stop shop for hardware, software, financing and services for any size business. Our accounting programs range from basic to sophisticated multi-user systems plus Point of Sale, Inventory, Invoicing and Payroll packages. Call for a catalog or e-mail us at info@maxworld.com.

MAX COMPUTERS • (800) 656-6299

1506 25th Street, San Francisco, CA 94107
<http://www.maxworld.com/> • Fax (415) 695-0257

CIRCLE 565 ON READER SERVICE CARD

BUSINESS OPPORTUNITIES

Personal Computer Owners

Personal computer owners can earn \$1000 to \$5000 monthly selling simple services that are performed by your personal computer. Work at home in your spare time. FREE list of 100 best services to offer.

Write or call:

C. O. B. I. W.

P.O. Box 12107, La Jolla, CA 92039
Toll Free: 800-714-2332 Ext. 114

CIRCLE 586 ON READER SERVICE CARD

COMPUTER INSURANCE

INSURES YOUR MAC

The ComputerownersSM insurance policy repairs or replaces hardware, media and purchased software. \$49 a year covers up to \$2,000 of equipment against theft, fire, accidents, power surge, natural disasters and more! \$50 deductible. Call for immediate coverage or information. 1-800-800-1492.

SAFEWARE, The Insurance Agency, Inc.

5760 N. High Street, PO Box 656
Columbus, Ohio 43085

CIRCLE 587 ON READER SERVICE CARD

CD ROM

CD-ROM Production Services

- All formats: Mac, ISO, Hybrid, Mixed Modes
- Premastering, beta testing, or archiving
- Mass Replication available, any quantity
- Personal, Knowledgeable Service for 10 Years!
- Certified Apple Developer • Low prices/fast delivery

NORTHEASTERN DIGITAL RECORDING

2 Hidden Meadow Ln, Southboro, MA 01772
508-481-9322 Fx: 508-624-6437 CDNDR@aol.com

CIRCLE 567 ON READER SERVICE CARD

COMPUTER SHOWS

MacWest Expo '97

Southern California's Best Macintosh Show!

October 24-25, 1997

Los Angeles Convention Center

Exhibits • Seminars • Keynotes • Door Prizes

E-Mail: diane_p@pacbell.net Fax: 818.347.3876

MACWEST PRODUCTIONS

P.O. Box 704 • Woodland Hills, CA 91365
800.371.3358 • 818.347.EXPO

CIRCLE 577 ON READER SERVICE CARD

DISK DUPLICATION

CD-ROM MASS-REPLICATION

- Quantities from 500 discs to 10,000,000 +
- ISO 9000-certified manufacturing
- Complete, innovative printing & packaging: cardboard, Tyvek®, & jewel-box packaging options available.

OASIS® DUPLICATION

Contact Micah Solomon, President directly:
micah@oasiscd.com • 800/697-5734
Fax 540/675-2500 • FLint Hill, VA 22627

CIRCLE 568 ON READER SERVICE CARD

DRIVE SALES & REPAIRS

FLOPPY DRIVE REPAIR & SALES

Mac 3.5" 400k, 800k, & 1.44 MEG. (Repair) . . . \$40.00
Advanced Exchange From \$40.00
New & Refurbished Hard Drive & Floppy Drive Sales. . Call
Price includes most parts, cleaning & alignment. 1yr
warranty on repair, 2yrs on new drives. Schools + Gov't.
PO's accepted. Expert Data Recovery.

UPTIME COMPUTER SUPPORT SERVICES

<http://www.scvnet.com/~uptime> • 23633 Via Primero
Valencia, CA 91355 • 805-254-3384 • Fax 805-254-1950

CIRCLE 571 ON READER SERVICE CARD

GENEALOGY SOFTWARE

REUNION® 5- New upgrade!

BETTER THAN EVER! Sound & video, Web publishing, drag-and-drop editing. Unlimited individuals, events, facts, and sources. Create large wall charts: Ancestor and Descendant, plus new Relative and Timeline charts with photos - great for family reunions. To order call MacWarehouse 800-255-6227. Visit our our Web site: www.LeisterPro.com

LEISTER PRODUCTIONS

P.O. Box 289 Mechanicsburg, PA 17055
tel: (717)697-1378 • e-mail: info@LeisterPro.com

RELIGION

Bible Study on Disk or CD-Rom

Full Featured. Fast & Friendly Bible study software.

As the leader in Bible study software since 1981

we have continued to listen to our customers

and provide them with the tools they need.

Call for a FREE catalog. <http://www.brs-inc.com/bible>

BIBLE RESEARCH SYSTEMS

2013 Wells Branch Pkwy. #304, Austin, TX 78728
(800) 423-1228 (512) 251-7541

HARDWARE/PERIPHERALS

HEWLETT-PACKARD Demo Printers

All Macintosh/Apple Compatible Laser Printers, DeskWriter Inkjet Printers, PaintWriter Color Printers, Pen Plotters, DesignJet Inkjet Plotters.
<http://www.dasher.com/specials/macindex.html>

TED DASHER & ASSOCIATES

E-mail: sales@dasher.com
(800) 638-4833 Fax (205) 591-1108

SOFTWARE/BUSINESS

AutoMenus Pro

Menu enhancement Control Panel that makes menu navigation (especially those pesky hierarchical menus) much easier. What makes AutoMenus Pro so useful is that the menus stay down without the need to hold the mouse down.

NIGHT LIGHT SOFTWARE

305 Orange Ave., Mtn. View, CA 94043
<http://www.nlssoftware.com>

CIRCLE 572 ON READER SERVICE CARD

POWERBOOK BATTERIES & RAM

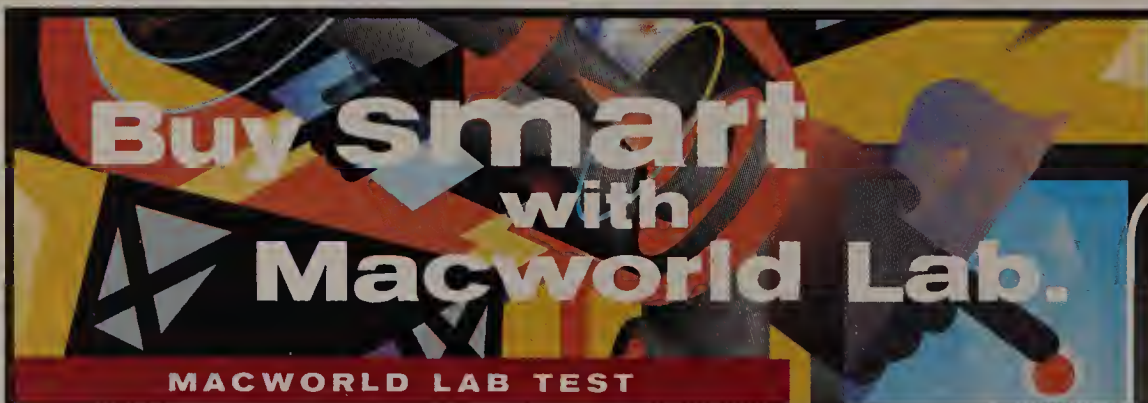
Your Best Battery & RAM Source!

From PB 100 to 3400, Mac Plus to Power Mac 9600, Erudite has what you need at prices that won't slow you down. We feature power products from BTI and Absolute, memory and 56K modems from Viking - all new & fully warranted. Call, e-mail or shop online for your best price! Visa/MC/Amex/Discover Accepted.

ERUDITE PRODUCTS CORP.

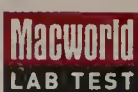
409 Grand Ave., Englewood, NJ 07631 800-310-8505
Email: sales@EPC-Online.Com, www.epc-online.com

CIRCLE 577 ON READER SERVICE CARD




Buy smart with Macworld Lab.

MACWORLD LAB TEST



To buy smart when you're choosing Mac OS hardware or software, you've got to put it to the test. Macworld Lab is on the job, testing, scrutinizing, and evaluating the performance and quality of the products you need. With real-world testing, we measure performance by real-life standards. Using the system and applications you'd use to complete the tasks you're faced with every day, our experts come up with answers that matter to you.

You can rely on Macworld Lab Test results—We test the products the way you use them.



THE ESSENTIAL MACINTOSH® RESOURCE

"A Macworld never goes by without me checking to compare prices. I always look to see if what I need is there."

—Owen,
Computer Consultants



Macworld
SHOPPER

continued from page 250

Apple news stories. If an article is grievous enough, memos from EvangeList members soon jam the author's e-mail box.

When James Coates covered Apple's purchase of Next in the *Chicago Tribune*, for example, he chose an angle particularly painful for Mac fans: that non-PowerPC Macs wouldn't be able to run Rhapsody. The headline: "Mac Users Abandoned."

The revenge of the EvangeListas was swift. "My America Online e-mail account is all but unusable, clogged with angry and often abusive notes," Coates wrote in a follow-up column. "Say something negative about Macs and you'll be accused of being a tool of the 'Apple-bashing' establishment."

EvangeList Backlash

But the EvangeList approach can backfire. "Kawasaki thinks he's doing a great thing," a metropolitan-paper tech columnist told me, "but he's actually just ticking us all off. If he wants less-emotional coverage of Apple, he should start by calling off his hounds."

Longtime Apple denigrator Stewart Alsop, whose columns landed him on the

EvangeList 8 times in 12 months, would probably agree. In *his* follow-up column, he referred to Kawasaki as a guy who "mobilizes thousands of less-informed people to harass and intimidate journalists, [recalling] Senator Joe McCarthy's attacks on actors, journalists, and other 'subversives' in the early 1950s."

Could it be? Is there really such a thing as EvangeList Backlash?

"These journalists depict us as pod people chanting: 'We are Kawasaki's minions and must attack,'" chuckles John Halbig, the EvangeList's administrator. "But EvangeListas are free thinkers. They sign on when they want to, unsubscribe when they want to, write letters when they want to. If the journalists are admitting that their emotions are affecting how they write their articles, they're in the wrong business."

Painful though the EvangeList treatment may be, it works, at least sometimes. "I really resent what Kawasaki did to me because of the mean-spirited mail that it brought and because of the damage it did to my reputation," James Coates told me. "But he has done a real service to Apple in reminding me and everybody else that

there are huge numbers of people who really care about their Macs." And in his follow-up column, he wrote, "This writer will never again write an Apple-related story without a keen gun-shy appreciation that critical hordes are judging every word."

Better yet: a *Boston Globe* writer's factually shaky Mac OS 8/Windows 95 comparison began with this snide baloney: "In two weeks, Apple Computer will release Macintosh OS 8. And hardly anyone cares." After a week of, er, *discussion* with EvangeListas, his follow-up column was a tad more conciliatory: "Overall, I'd give the Mac the edge. . . . Macintosh computing isn't dead, whatever happens to Apple."

Take Back the Streets

Until Apple gets a clue about marketing and PR, it looks as if we the readers will have to continue serving as the intergalactic Apple press watchdog.

But ironically, deep down, these writers must actually believe that Apple *won't* go under; if it did, what on earth would they write about? **m**

DAVID POGUE (www.pogueman.com) is coauthor of *The Weird Wide Web* (IDG Books Worldwide, 1997).

November 1997, Volume 14, Number 11 Macworld (ISSN 0741-8647) is published monthly by Mac Publishing L.L.C. Editorial and business offices: 501 Second St., San Francisco, CA 94107, 415/243-0505. Subscription orders and inquiries should be directed to: 303/665-8930. Subscription rates are \$27 for 12 issues, \$54 for 24 issues, and \$81 for 36 issues. Foreign orders must be prepaid in U.S. funds with additional postage. Add \$18 per year for postage for Canada and Mexico subscribers. Add \$69 per year for postage to all other countries. Periodicals postage paid at San Francisco, California, and at additional mailing offices. Postmaster: Send address changes to Macworld, P.O. Box 54529, Boulder, CO 80322-4529. Printed in the U.S.A.

Buy smart with Mac Superguide.

MACWORLD SUPERGUIDE

To buy smart when you're choosing a Mac OS computer, your best bet is to let Macworld be your guide. Check out the Mac Superguide in this issue — and every issue — for the latest and greatest in Mac systems. It's a comprehensive guide to every system on the market, meticulously reviewed and Star Rated, with our favorites highlighted by an Editors' Choice symbol.

With all the systems out there, you could easily get lost if you try to navigate them on your own. Don't risk it; trust the Superguide.

Macworld
THE ESSENTIAL MACINTOSH® RESOURCE

The Desktop Critic

by David Pogue

The Power of the Press—and the People

THE PRINT-MEDIA APPLE WATCHERS ARE SNARLIER THAN EVER

GIL AMELIO DIDN'T bring the Apple battleship all the way into the harbor, but he did plug in some excellent coordinates: he fixed the hardware problems, the OS strategy, and the madcap spending sprees. If you ask me, Apple's affairs are thoroughly in order for a comeback. So how come its problems aren't over?

Because Gil stank at *marketing*. "I'm a technologist," he told the *San Jose Mercury News*. "Figuring out how to increase the sales at Sears Roebuck was not exactly my strength." That's putting it mildly.

Here we are, almost two years into Apple's slump, and astoundingly slanted articles continue to appear in the mainstream press. The tech writers are entitled to their opinions, of course, but nobody is served by the thick layer of sensationalistic venom that accompanies their stories. *Fortune*: "The only sensible conversation to have about Apple is . . . how long it will take to die." *Business Week*: "Apple is left in a shambles. Amelio's forced resignation has all the signs of a classic blunder—too late, too little." *Time*: "[Apple is] a chaotic mess without a strategic vision and certainly no future."

These alarmist opinions fuel a vicious circle: the public gets paranoid, Apple's sales suffer, the stock slumps, and we get "I told you so" articles by the nasties.

Checking Up on the Press

Now, in other fields there are media checks and balances. Every month, Wall Street analysts write predictions about the stock market, such as: "Our firm sees a major market correction by mid-July." And every month, *Smart Money* magazine's hilarious *Reality Check* column returns to those months-old predictions to see just how wrong the experts were. "If that's what your firm sees," *Smart Money* might say, "it needs contact lenses;

the market skyrocketed all summer long." In other words, the experts get graded. The *New York Times* even runs a column that checks up on *Smart Money*, grading each issue against other finance mags.

This column gets inspected and corrected by at least three editors who've been in this business longer than I have. But who holds mainstream-press tech writers accountable? Not their editors; computers are too specialized a field.

So the trusting public gets factual gaffes, such as *Time*'s assertion that System 7 was considered a flop when it was introduced. (Not in my reality.) Or we

expert as saying, "Apple has lost the OS war, and there's no point fighting"—not a surprising quote, since the "expert" is also an Intel director.

Hell-Checkers

Fortunately, there is one final judge of bias, distortion, and error—we, the reading public. In the last two years, the Macintosh war over public opinion has been waged in the letters columns of the mainstream business rags. But letters columns don't affect nearly as many people, or carry nearly the same authoritative weight, as the original article. Nor do they affect the

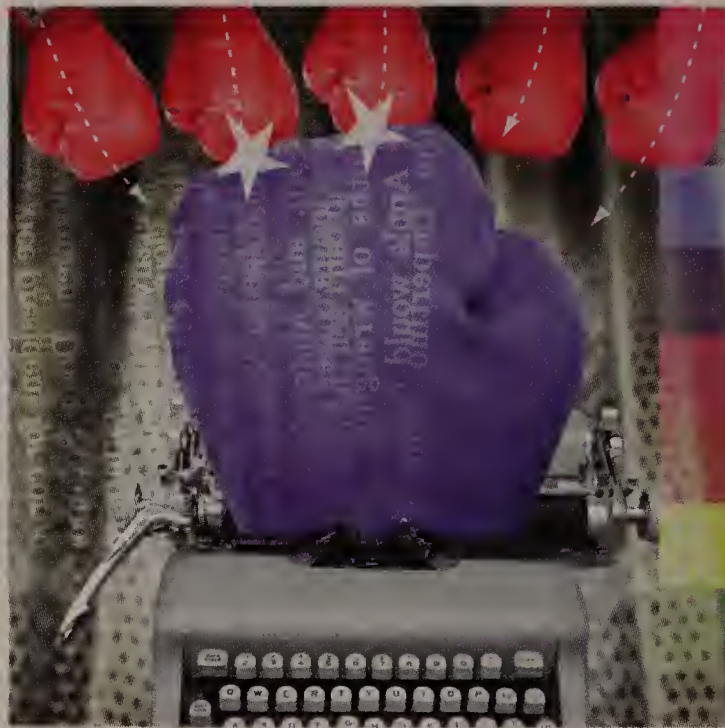
same group of readers; once an article has been published, the damage is done.

I've occasionally fired off, with superhuman restraint, a polite letter to the editors of some fine mainstream publications, pointing out their tech writers' errors. But the consequences left me even more disappointed than the original articles. In all three cases, my letter was forwarded to the article's author; in all three cases, the author responded directly to me with a testy, defensive e-mail. One guy even insisted that the factu-

al errors weren't his, and he informed me that he'd see to it that my letter wasn't published. (They published it anyway.)

The Evangelistas

There is one more-or-less official press watchdog, actually. It's the Mac Evangelist: an Internet-based mailing list with 40,000 members, supervised by Apple's Guy Kawasaki. (You can subscribe at www.evangelist.macaddict.com.) Each day, Evangelist members receive e-mail notifications of positive Apple news—and anti-



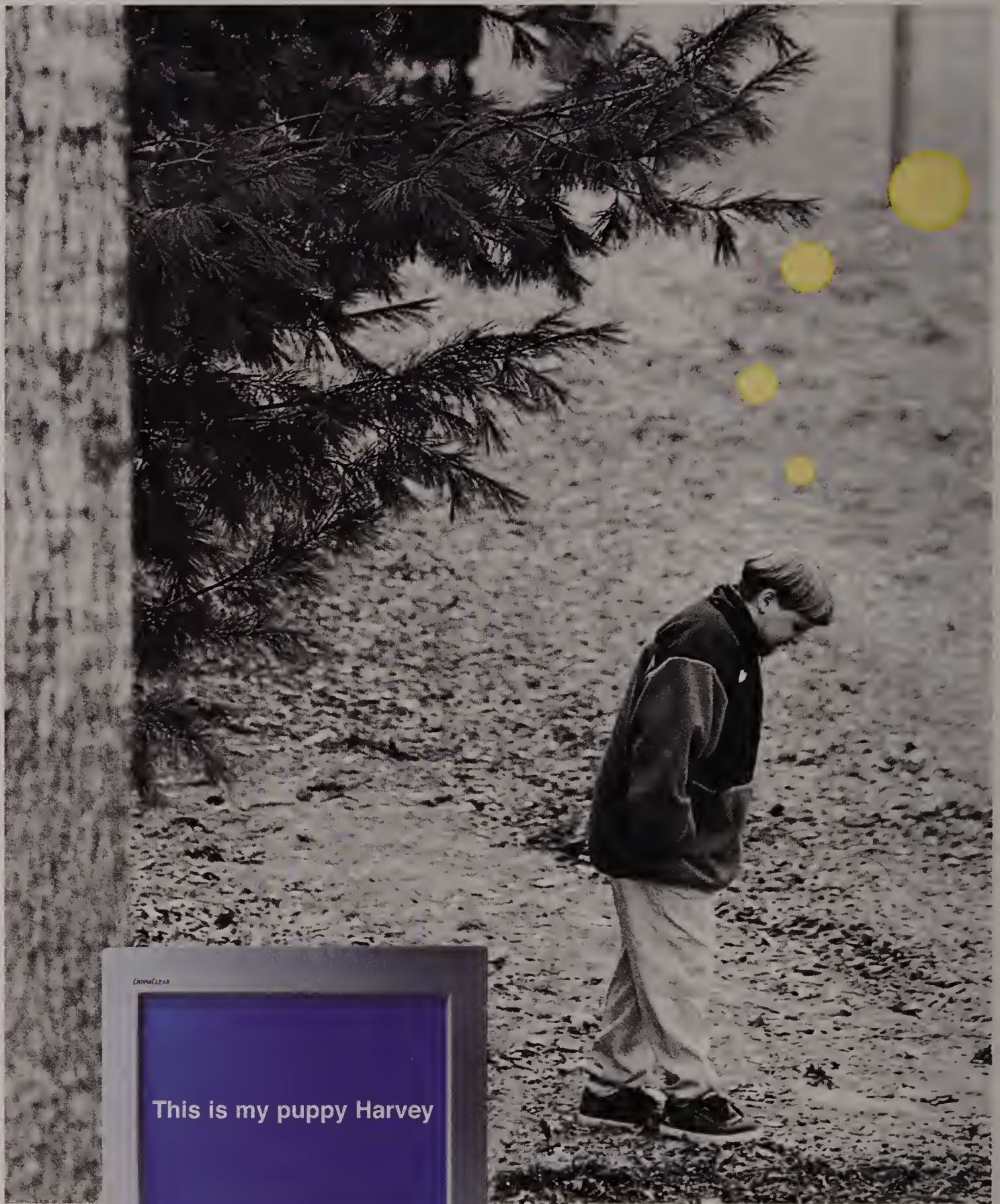
get reporting without context: shock, for example, that Gil Amelio's severance pay was \$7 million after 17 months on the job—never mind that big good-bye checks are standard in large corporations: AT&T's outgoing guy got \$26 million (after 9 months); and although a lawsuit is pending, Disney's guy got \$90 million (after 14 months).

Or we get built-in bias: a *Fortune* columnist who admitted being an investor in Be, Inc., for example, predicted Apple's demise because it chose the Next OS instead of Be's. *Business Week* quoted an

continues on page 249

Christian Murphy was non-verbal. He lived with a wall between himself and the world.

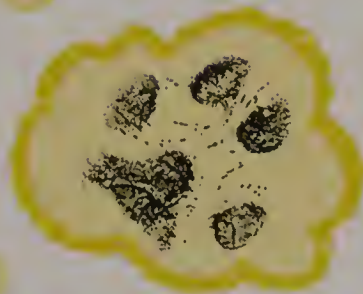
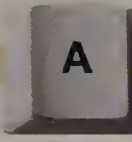
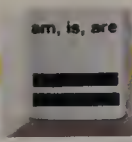




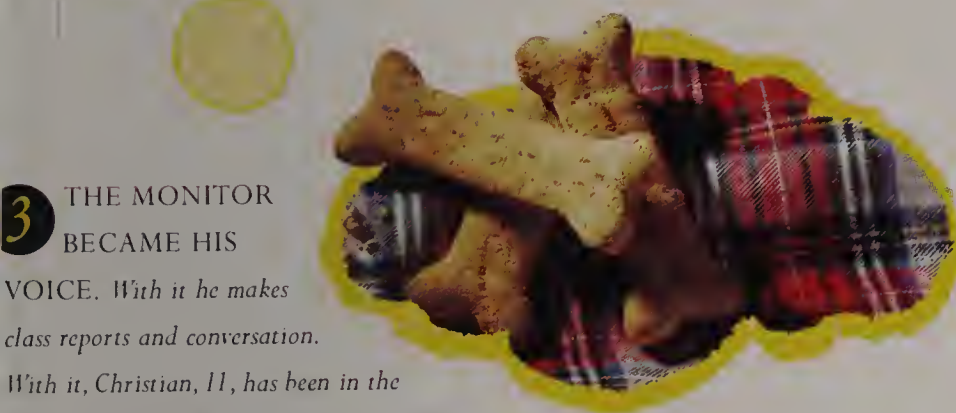
Until he found this window.

1 THIS IS CHRISTIAN.
He can see, hear, feel, touch, but
he cannot speak. He was born with
autistic tendencies that cut him off
from the world around him.





2 A TEACHER DISCOVERED that Christian would respond to images from his life. She put visual cues to the story of his new puppy on a special keyboard.



3 THE MONITOR BECAME HIS VOICE. With it he makes class reports and conversation. With it, Christian, 11, has been in the regular Osterville, MA public school since first grade.



4 WITH THE PICTURES, HE MADE SENTENCES. With the sentences, he made friends. Christian's monitor is the window between his non-verbal world and the speaking world of his friends. Through it, he teaches them many things.



NEC MultiSync Monitors E and A Series

THE MONITORS THAT ARE BEST FOR CHRISTIAN'S NEEDS can also speak to yours. Introducing the NEC MultiSync® Enterprise and Advanced Series, the monitors for people looking for superior, lifelike images. And the monitors for people who want the kind of flexibility that super high resolutions and refresh rates ensure.

OSM™ (On-Screen Manager) controls make image adjustments easy. Plus, select Enterprise monitors feature CROMACLEAR™ CRT, for unparalleled focus, contrast and intense color saturation. And, of course, the industry-leading NEC warranty includes 3 years parts, labor and CRT.

For more information on the new performance-driven MultiSync Enterprise and value-oriented Advanced Series call 1-800-NEC-INFO or visit www.nec.com.



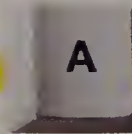
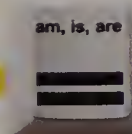
MULTISYNC® MONITORS

	Max Res	Bandwidth	CRT Type	Pitch
A500	1280 x 1024 @ 60Hz	112MHz	Dot Trio	0.28mm dot
A700	1280 x 1024 @ 65Hz	119MHz	Dot Trio	0.28mm dot
E500	1280 x 1024 @ 65Hz	119MHz	CROMACLEAR	0.25mm mask
E700	1600 x 1200 @ 65Hz	177MHz	CROMACLEAR	0.25mm mask
E1100	1600 x 1200 @ 65Hz	177MHz	Dot Trio	0.28mm dot



Expect more. Experience more.

NEC



Circle 16 on reader service card



Orbit. It's a trip.

Tired of that same old mouse? Want to go where no one has ever gone before?

Buckle your seatbelts and get ready for Orbit.

Orbit is a new kind of trackball that combines the comfort of a mouse with the precision of a trackball. And Orbit is designed to feel like an extension of

your own hand. The result is out-of-this-world comfort and total fingertip control of your cursor.

Orbit comes with our award-winning MouseWorks software, a 5-year warranty, toll-free technical support, and a no-risk 90-day trial.

Don't settle for the ordinary. Get into Orbit.

PC Connection
1-800-986-2259

MacWAREHOUSE
1-800-255-6227

KENSINGTON
www.kensington.com

The Mac Zone
Your Catalog SuperStore

MacMall
Creative Computers

APS
Technologies

1-800-258-2088 1-800-222-2808 1-800-374-5681